Gas Journal

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Editorial Notes

The South Metropolitan Tariff

On Thursday night last week the South Metropolitan Gas Company announced the suspension of its new tariff system which, since its introduction on Sept. 11, has given rise to such fierce opposition. The Company's official announcement read as follows: "In view of representations made by the Government, members of Parliament, delegates from South London boroughs, together with other public authorities, the board of directors of the South Metropolitan Gas Company have decided to suspend the operation of the new tariff of gas charges as from the first meter reading or collection of the meter after Oct. 16. The old method of charge will, therefore, apply from that date, with, however, a slight increase in the price of gas to all consumers which will be announced in due course."

It was given out later that the flat rate increase is to be by one farthing—from the former price of 8¾d. to 9d. a therm. The increase, it was stated, is necessitated by the increased cost of coal, materials, and labour. The charge for the hire of slot meters and fittings will be that in force before the introduction of the tariff—namely, 1¾d. a therm.

So ends at any rate the first chapter in an episode unparalleled in the history of the Gas Industry, in which opposition to the scheme was ventilated and fanned by every device known in modern life—by letters to the Press; by newspaper articles, some serious, some so utterly irrelevant and personal as to be beneath contempt; by debates in borough councils; by public meetings; and by deputations of members of Parliament of all parties and mayors of the boroughs affected.

Though the Company believed that much of the agitation was artificially exaggerated for political purposes, and resisted for a long time the pressure which was brought to bear upon them, it would seem that one viewpoint was held with such conviction by the more serious-minded section of the opposition that there was no option but to accept it. We recall a passage from the 1934 Institution Paper in which Mr. H. Curtis described a seasonal charge system which he had put into operation at Macclesfield. "Equity," he said, "no doubt demands that each consumer should bear his proportionate share of the overhead charges, but it was feared that such an ideal was out of our reach. As public utility undertakings . . . we are, I think, expected to give certain privileges to the consuming public for which we get no corresponding return. We are expected, in short, to carry a certain proportion of unremunerative consumers." This, we believe, was the view expressed, in an atmosphere far removed from the hubbub of the streets or the headlines of the popular Press, by deputations which paid the sincerest of tributes to the hundred years' service of the Company to South London, but made it quite clear where they think lies the duty of a gas undertaking. And it was to this weight of opinion that the Company felt compelled to yield.

There is no question that opinions within the Gas Industry have been sharply divided upon various aspects of the controversy, but here surely is a matter upon which there can be general agreement. The Industry cannot possibly consent whole-heartedly to being cast for this part of philanthropist without limit. It is realized, of course, that in all areas there is bound to be a proportion of consumers who, owing to their circumstances, could never be raised above the unremunerative class. The proportion varies according to the nature of the districts served. For some the problem is a minor one. For others, as for instance the South Metropolitan Company, it is a far more serious matter, and in this case, as in many others, we surmise that recent re-housing policy has only added to the burden. The very bodies who hold such strong views upon the duties of a gas undertaking are commonly among the chief creators of unremunerability among gas consumers by limiting the uses of gas in their housing schemes to those purposes only for which electricity is beyond all reason, and, with a blind faith in electricity, encouraging its maximum possible utilization by their re-housed tenants.

The Enquiry to Proceed

As for the future, it has been made known that the President of the Board of Trade intends to proceed with the Parliamentary enquiry in spite of the decision of the Company to suspend the tariff, and a Joint Select Committee is expected as soon as arrangements can be made after the new Session begins on Nov. 3. It is

quite safe to assume that the South Metropolitan Company would not have put out its tariff without being completely confident of being able to justify its figures "in equity." What line the enquiry will follow as regards this point remains to be seen. The recommendation of the Gas Legislation Committee, appointed by the Board of Trade, in favour of allowing the Gas Industry a minimum charge was, it will be remembered, not implemented by Parliament in the 1934 Act. Can the next Committee overlook this Parliamentary refusal and at the same time condemn the principle of such methods of charge as that which is to be the prime subject of enquiry? We surmise it will be difficult on the available evidence.

Unfortunately, it is anticipated that the Board of Trade will ask that the terms of reference be so drawn as to enable the Committee to enquire into the whole basic price system. It is fairly clear that not much satisfaction will be obtained along these lines by those who would wish to use them to condemn the South Metropolitan scheme, but it does provide the Board with an opportunity of bringing to notice again a system of the merits of which they have, quite frankly, had doubts from the outset. This was clearly stated by the President of the Board in one of his contributions to the controversy at the beginning of the month. Here again the Industry will face the enquiry with a completely clear conscience and with little difficulty in justifying the system as the best that has so far been devised for ensuring a fair deal to all parties. Our use of the word "unfortunately" is connected merely with the thought in our minds that the dragging into daylight of the basic price system in connection with the unhappy affair of the South Metropolitan tariff is likely to raise suspicion in the public mind where none is warranted, and on a subject which the public is not likely to understand in the very least.

Looking Ahead

THERE will be general agreement with Mr. Stanley Taylor's view, expressed in his Presidential Address to the British Commercial Gas Association, that the future work of the Association is destined to be of greater value to the Gas Industry as a whole than it has been in the past—and, considering how during the past twenty-five years the Industry has benefited by the activities of the Association, that is saying a great deal. Competition, already keen, will be keener; it must make us keener in competition. We must plan our work and then work our plan. Our Industry has become accustomed to a large increase in consumers annually, and they now number close on 11 millions. This growth has been accompanied by an increase in sales, but not in equivalent ratio. For years sales per consumer have been on the decline, and in regard to domestic consumption the decrease would have been all the more apparent if the official figures stated separately the domestic and the industrial sales. As it is, of course, the sales are given as a combined total, which clouds the true picture of domestic consumption per consumer. Statisticians have been telling us that this year marks the peak of our national population, and there is no reason to doubt that they are correct in this. After 1941 the population may be expected to fall, slowly but steadily; no longer will the Gas Industry be able to record increases in sales due to adding new consumers to its mains.

The future progress of the Industry must rest, therefore, on persuading existing consumers to take fuller advantage of the services which gas has to offer, and to do this demands a much larger measure of working together within the Industry. Given this internal co-operation, there is nothing to fear. In collaboration with the Industry the manufacturers of gas appliances have, as Mr. Taylor so rightly observes, met the challenge of new social conditions and increased competition in the most effective way by putting improved models on the market. Engineers, scientists, and designers have been employed to bring gas appliances to their present high standard of thermal and working efficiency; new methods and materials have been pressed into service to produce a standard of finish and appearance in keeping with the modern idea. Nor has the attention of the manufacturers been confined to production. They have done much to create a wider market for gas by continuous and large scale advertising. More new gas appliances were sold last year than ever before, and this year's figures will surpass anything yet recorded. The possibilities in the domestic water heating and space heating loads are enormous; the problem is to translate these possibilities into facts, and Mr. Stanley Taylor points to the solution of this problem.

National Planning

THE tendency of all fuel industries to-day is in the direction of national planning, increased co-operation and greater uniformity in methods of distribution. The Gas Industry will have to face broadly planned concerted drives from the electricity industry, and individual effort has no chance of succeeding against this new mode of attack. It is essential to-day that the gas administrator should have a national outlook on the problems of the Industry. "We need a strongly-founded national policy to which all can subscribe without loss of individual initiative." We quote Mr. Taylor. On many occasions we have urged the desirability of regional planning centrally co-ordinated. The success which has attended attempts in this direction is surely a pointer to future policy. An outstanding example of regional planning to expand and consolidate one phase of the Industry's activities is provided by the Industrial Development Centres which for some years now have been functioning in ten areas of the country, linked up with a central information bureau directly administered by the B.C.G.A. It is not too much to say that these Centres have encouraged a new outlook on the use of gas in industry—the type of outlook so greatly needed in regard to other aspects of the Gas Industry's work. Another example of regional planning is the London and Counties Coke Association, which admirable pioneer effort has paved the way to planning in other areas on similar lines. More recently we have seen the result of the co-operative refrigerator campaign—another pointer to what we have in mind. The question of regional marketing of domestic appliances by the offer of identical terms for hire-purchase, guarantee, and maintenance was discussed in private session at the B.C.G.A. Conference. It is a question of the utmost importance to the future of the Industry. Only by a common policy of sales and service can we hope to overcome the competition we are certain to encounter.

Sales Personnel

THOUSANDS upon thousands of modern gas appliances of high efficiency and automatic in operation are being installed. We must see to it that the consumer obtains the full service which these appliances are capable of providing. A prime factor in this is, of course, the offer of gas at such a price that the consumer will make full use of gas in the knowledge that his total expenditure on such service, taking all things into consideration, is comparable with that of employing any competing fuel or any combination of competing fuels. One of the noteworthy features of the past year has been the increase in the number of gas undertakings which have framed promotional gas rates which offer a real inducement to consumers to take full advantage of their gas supply. Cheap gas alone, however, is insufficient; it must be coupled with effective service, and too much emphasis cannot be laid on the value of " after-sales " service. This, as Mr. Taylor points out, necessitates the recruitment of the right type of sales personnel. Recruit the right type of men and train them carefully. The goodwill engendered by pleasant personal relations between customers and employees cannot be assessed in the balance-sheet, but it is a very real asset. Salesmanship is now one of the largest professions in the country. In other industries the number of salesmen has increased by 50% in the last ten years. The improvement of selling methods in general means that the ordinary customer has become more knowledgeable and discriminating than ever before, and consequently that the salesman needs better qualifications and can demand a better salary than before. The Gas Industry does not employ as many qualified salesmen as the scale of its operations would warrant. No gas undertaking is so small that it does not need the services of a good salesman. Failure to employ enough salesmen of the right type means that potential business is being lost to the Industry. And in the cultivation of good relations between undertaking and consumer qualified women—as fortunately is being increasingly appreciated—can play a very important rôle.

All the sales work of the Gas Industry must have as a background skilled national advertising—this is no less necessary to-day than it was twenty-five years ago, when the B.C.G.A. came into being to carry out this national advertising as one of its chief functions. The character and efficiency of a public service is judged very largely by the quality and extent of its publicity. And in this connection we would call especial attention to the observation of Mr. Taylor that the average man's conception of the Gas Industry is neither as flattering nor as definite as we in the Industry would like to think. To-day there is a growing tendency to judge every industry not merely by its profit-making possibilities, but also on the value of its contribution to the life of the community. Every fact concerning our Industry should stimulate its entire personnel to enthusiastic endeavour; but we must bring home to the man in the street the fact that the Gas Industry is an important and essential element of our national economy. Here is a public service which supplies oven ten million homes and thousands of workshops with smokeless fuel; which draws its raw material from the national coalfields, keeping 70,000 British miners at work; which, with its allied trades, employs hundreds of thousands of workers. It is a part of our business to see that such facts as these are properly appreciated by the public we serve, and this, as Mr. Taylor says, can only be done by the intelligent use of national publicity.

Municipal Ownership

" I HOLD no brief for the municipalization of public utilities on political grounds, and unless these are administered by public authorities in a manner comparable with the progressive and forceful methods adopted as a rule by private enterprise, I would much rather they were excluded from municipal activities." This interesting quotation is from the Paper by Mr. James Gorman, Chairman of the Public Utilities Committee of the City of Edinburgh, at the recent Conference of the British Commercial Gas Association. In Edinburgh administration of the public utilities is vested in one Committee—the Public Utilities Committee—and there are two Sub-Committees, one dealing with gas and transport, the other with electricity and water, which is, of course, an unusual arrangement. Mr. Gorman, in a comparison of municipal and company control, suggests that the Sub-Committees correspond to the board of directors of a company undertaking, and the full Committee to the board of a holding company. While, however, a board of directors is accountable only to the shareholders of the company, the Public Utilities Sub-Committee reports to the Public Utilities Committee which is responsible to the whole Council, which in turn is answerable to the municipal electorate. What a difference there is as a rule, he remarks, between the outlook of the two different kinds of owner, and how important this difference can be in its influence on policy. The main concern of the shareholders and therefore the board of directors is to give a service as cheaply and efficiently as possible to enable them to build, extend, and establish a satisfactory clientele and at the same time earn a reasonable dividend on the money invested. It is essential to adopt progressive and forceful methods of advertising and salesmanship, and money is provided for the purpose. There is usually no niggardliness in the allocation of funds for any purpose which will contribute to the success of the undertaking.

On the other hand, the ratepayer, having no direct financial interest, is concerned to obtain the greatest amount of service at the smallest possible cost, and the idea of profits in connection with public supplies is regarded with disfavour. The town councillor, with one eye on the electorate, is frequently tempted to adopt the same point of view and to concern himself more with the handing out of favours in the form of lower tariffs than with consideration as to whether or not the money would be better employed in the development and extension of the business. In this aspect lies the danger in the development and management of municipal public utility undertakings. " Reduction in commodity prices is always popular, and, irrespective of it being more profitable in the long run to utilize any surplus money accumulated in advertising and development, the temptation to an elected representative to adopt the popular course by using it to lower prices is very real and apparent in many municipal administrations. Suggestions by a head of a department may be turned down on the grounds that they involve expenditure of an exceptional or unnecessary character without due consideration being given as to whether the money spent may not yield ultimately handsome profits. Even if profitable the elected representative may feel that to make profit at the expense of the ratepayer is not only wrong in principle but is putting money into the coffers of the public utilities which should go into the pockets of the innumerable tradesmen whom he represents, forgetting that extra profit means a cheaper commodity.

. . . Schemes of expenditure which will ultimately benefit the undertaking, but which are difficult to prove profitable in £ s. d., may in consequence run the risk of being pruned to such an extent as to make them useless or ineffective, or they may be entirely rejected as unnecessarily extravagant or as involving too great a risk."

"A Specialized Work"

MR. GORMAN emphasizes that the management of public utilities is becoming more and more a specialized work, and there is no question that the policy of town councils should be developed along the lines of keeping the personnel of the responsible committees as permanent as popular representation will permit, so that a member may, through long association with the public utilities, become familiar with the needs and capable of determining a suitable policy. Again, if proper progress is to be registered, then the management of the undertaking should be granted a measure of freedom comparable to that usually given by companies. The Author analyzes the position very clearly, and comes to the conclusion that an enlightened municipality should be as capable as private enterprise in the administration of a public utility. It is obvious from the Paper that the Edinburgh Corporation is "enlightened." The capital expenditure on the Gas Department is £3,170,703, and the outstanding loan debt on May 28 last was £891,547, or 28·12% of the total capital expenditure. To-day the capital outstanding debt amounts to only £239 per million cu.ft. of gas sold —a very low figure which places the Undertaking in a favourable position as far as gas charges are concerned. With one aspect of municipal control, however, Mr. Gorman does not deal, and that is its influence on amalgamation. A week or two ago we referred to a Paper at the World Power Conference by Mr. George Evetts, in which the view is put forward that obvious schemes of rationalization are being held up partly because of the existence of municipal undertakings in close proximity to those owned by companies, and because of the difficulty of getting municipal undertakings to co-operate with other municipalities. Civic pride in the ownership of a gas undertaking may prevent an advantageous sale of that undertaking, and parochial jealousy often prevents amalgamation with neighbouring municipalities.

Personal

Mr. H. JAMES YATES, the Chairman of Radiation Ltd., received the Order of Le Cordon Rouge at the Golden Jubilee Banquet of the Universal Cookery and Food Association, which was held at the Park Lane Hotel, London, on Monday, Oct. 12. The presentation was made by the Marquess of Carisbrooke, G.C.V.O., the Senior Don of the Order, on behalf of the Association, in recognition of his extensive gastronomic knowledge and his services in the cause of domestic cooking.

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After nearly twenty years as Engineer and Manager of the Castleford and Whitwood Gaslight and Coke Company, Mr. GEORGE F. TWIGG is retiring at the end of this month.

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We learn from the South Metropolitan Gas Company that Dr. CHARLES CARPENTER, who has been ordered complete rest, continues to make very slow, though steady, progress.

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Now that the Ashton-under-Lyne and Mossley Gas Undertakings have been amalgamated, Mr. WILLIAM BENNETT, recently appointed Engineer and General Manager of both concerns, states that the Ashton undertaking will continue as before. Councillor JOSEPH TOWNSLEY, for many years Manager of Ashton Gas Company, has joined the Board of Directors of the new Company, and has also become a Director of the Mossley and Saddleworth Gas Company, Ltd., which is a subsidiary company of the Palatine Gas Corporation, who have secured the majority of the shares in the Ashton Gas Company.

Gas Journal Shewring Fund

Donations are invited to the Fund, full particulars of which were given in the "JOURNAL" for July 22. The Management of the Fund is in the hands of Messrs. F. G. Shaw (Buxton), W. W. Townsend (Colchester), and J. Bridge (Elland). All expenses having been guaranteed, the whole of the sums received will be applied, without any deduction whatsoever, to the benefit of the widow and children of Harold Shewring, by whose tragic death earlier this year they were left in distressed circumstances.

Cheques should be made payable to the "GAS JOURNAL," and crossed "Shewring Fund Account." All donations will be gratefully acknowledged by the Editor, who is Treasurer to the Fund.

Forthcoming Engagements

Oct.

22.—COKE OVEN MANAGERS' ASSOCIATION.—Annual Dinner at the Hotel Victoria, Northumberland Avenue, W.C. 2.
23.—MANCHESTER DISTRICT ASSOCIATION.—Meeting at the Midland Hotel, Manchester, 1 p.m.
24.—WESTERN JUNIORS.—Opening Meeting at Bristol.
24.—LONDON AND SOUTHERN JUNIORS.—Visit to National Physical Laboratory.
24.—SCOTTISH JUNIOR ASSOCIATION.—Joint Visit to R. & A. Main, Ltd., Falkirk.
26.—LONDON AND COUNTIES COKE ASSOCIATION.—Fifth Annual General Meeting at the May Fair Hotel, 3 p.m., preceded by Annual Luncheon.
30.—B.C.G.A.—Eastern District Conference at Grimsby.
30.—SOUTHERN ASSOCIATION.—General Committee Meeting at 1, Grosvenor Place, S.W. 1, 2.30 p.m.

Nov.

3.—I.G.E.—Council Meetings, 9.30 a.m. and 4.30 p.m., at the Institution of Mechanical Engineers.
3 and 4.—I.G.E. Autumn Research Meeting.
5.—S.B.G.I.—Autumn Meeting at the May Fair Hotel.
5.—BRITISH ROAD TAR ASSOCIATION.—Luncheon at Grosvenor House, Park Lane, W. 1.
5.—MIDLAND JUNIORS.—Meeting and Paper by D. W. G. Scott.
12.—SOUTHERN ASSOCIATION (EASTERN DISTRICT).—Meeting at 1, Grosvenor Place, S.W. 1, 2.30 p.m.
13.—LONDON AND SOUTHERN JUNIORS.—Annual Dinner, Empire Restaurant, Victoria.
14.—SCOTTISH EASTERN JUNIORS.—Visit to Inverkeithing.
14.—SCOTTISH WESTERN JUNIORS.—Meeting and Paper by C. A. Poulson.
17.—I.G.E.—Gas Education Executive Committee at 2.30 p.m.
19.—MIDLAND ASSOCIATION.—Autumn General Meeting at Birmingham.
20.—LONDON AND SOUTHERN JUNIORS.—Meeting and Paper by W. L. Boon.
21.—WESTERN JUNIORS.—Visit to Norton Hill Colliery.
21.—MIDLAND JUNIORS.—Visit to Austin Motor Works.
24.—WALES AND MONMOUTHSHIRE JUNIORS.—Visit to Cardiff Engineering Exhibition.

There will be no meeting of the Central Executive Board of the National Gas Council, or of the Central Committee of the Federation of Gas Employers during the month of November.

News in Brief

An Increase in the price of gas as from next survey by ½d. per 1,000 cu.ft., making the charge 3s. 10d., has been decided upon by the Troon Town Council.

A Wide Range of domestic appliances is being exhibited by the Perth Corporation Gas Department at the Perth Trades Exhibition. Shop heating is featured, as well as refrigeration and water heating.

The Lighting of Edinburgh streets will this year cost Edinburgh Corporation £15,000, an increase of £4,500 on the estimate for the past year. The increase is created with the rapid extension of the city. There are now 379 miles of lighted streets, of which 251 miles are lit by gas and 128 by electricity.

Extensions are to be undertaken by the Dumbarton Gas Department to the existing plant at the Gas-Works in the Newton area of the town, and powers are being sought to enable borrowing up to £30,000 to meet present and future capital outlays. Since 1923, when the present gas plant was constructed, consumption of gas in the burgh has risen by 53%.

Application to the Board of Trade is to be made by the Johnstone Town Council for a Provisional Order defining the areas of their gas supply. The proposed area would take in Erskine, Inchinnan, and surrounding districts. The Renfrew Town Council are objecting to the inclusion of Erskine and Inchinnan, while the Paisley Town Council have deferred consideration for a month.

Application for a Special Order under the Gas Undertakings Acts, 1920 to 1934, is intended to be made to the Board of Trade by the Portsmouth and Gosport Gas Company for the purposes *inter alia* of extending the limits within which the Portsmouth Company are authorized to supply gas and of empowering the Company to purchase the Undertaking of the Hayling Island Gas Company, Ltd.

The Midland Tar Distillers, Ltd., Exchange Buildings, Birmingham, have erected new offices on modern lines adjoining their principal works at Oldbury. Accordingly, on and after Nov. 2 the address of the Head Office of the Company will be Oldbury, Birmingham. Telephone No.: Broadwell 1661. This change is part of a programme of centralization which includes considerable alterations and extensions to plant at the works.

Owing to the Popularity of the gas cookery demonstrations held last week at Cheltenham, numbers of people failed to gain admission. Miss Eccles, of Cannon Iron Foundries, Ltd., encouraged large audiences to obtain better results from gas cooking. Under the auspices of the Cheltenham and District Gas Company an exhibition of modern gas appliances held concurrently with the demonstrations was extremely successful.

"**An Army**, of course, marches on its stomach; and, mindful of this, the War Office has installed gas-cookers." This bouquet from an article on "The Soldiers' Home" in the *Sunday Times* for Sept. 27, 1936, is reproduced by the Leamington Priors Gas Company on the front of the reprints of their 143rd Ordinary General Meeting. This opportunism bears ample testimony of the ever-watchful publicity sense of the Leamington Company.

An Address was recently given to the members of Hinckley Rotary Club by Mr. William A. Twine, A.I.C., A.M.I.Mech.E., Chemical Plant Superintendent of the Birmingham Corporation Gas Department. Basing his remarks on "The Romance of a Piece of Coal," Mr. Twine dealt with the process of coal from the time it arrived at the gas-works and its subsequent distillation, leading to the extraction of important oils, gases, and tar for use on the road.

A Public Lecture has been arranged by the Institution of Chemical Engineers on "Research at the Lowest Temperatures and its Importance to Industry," which will be delivered by Prof. F. A. Lindemann, M.A., Ph.D., F.R.S., of the University of Oxford, on Friday, Oct. 30, in the Institution of Civil Engineers, Great George Street, Westminster, at 6.30 p.m. In this lecture, Prof. Lindemann proposes to show how investigations of this type are of the highest importance to the chemical industry; for instance, the calculation of the best temperatures and pressures for the production of synthetic ammonia depends on work very near the absolute zero. Admission to the lecture is free, and tickets may be obtained on application to the Institution of Chemical Engineers, 56, Victoria Street, S.W. 1.

A Fish Friers' Exhibition, similar to the recent successful one at Newcastle-on-Tyne, is contemplated by the Sheffield and District Fish Friers' Association, who have passed a resolution to the effect that the branch would be pleased to co-operate with the Sheffield Gas Company in arranging such an exhibition in the near future. The City Hall, the largest in the town, was suggested as being the likely venue. This decision was reached following an address to the members on publicity matters by Mr. R. F. Simpson, Publicity Manager of the Sheffield Gas Company. He said that a plan of the whole idea would be submitted to the branch for consideration, and possible suggestions.

Aggregate Attendance for the five days of the recent successful cookery demonstrations held by the Maidstone Gas Company nearly reached the thousand mark. A more difficult recipe was chosen this year for the cake-baking competition, and resulted in 96 cakes being entered, for which three prize awards were made. The gas cookery demonstrations were given on a "New World" gas cooker with "Regulo" automatic oven-heat control by Miss M. Lee-Booker, First-Class Diplomee (Marshall School, London), of the Radiation Research Kitchen, who prepared a very comprehensive syllabus, and she was available to consumers for advice and questions on any matter connected with gas cooking generally. The Company offered a special discount of 10% for all appliances ordered during the demonstrations.

A Very Successful Series of cookery demonstrations by the Hereford Gas Department concluded after a fortnight's run at St. Peter's Church House on Oct. 10, when 112 ladies attended the awarding of prizes to the successful competitors by Mr. F. Cuddon, Vice-Chairman of the Gas Committee, who referred to the good work of the demonstrator, Miss K. M. Johnson. Mr. Cuddon paid tribute to the Gas Engineer, Mr. A. Roberts, and his staff for the way in which the demonstration room had been laid out. Mr. Arthur Roberts, in introducing Mr. Cuddon, spoke of the excellent attendance and especially the number of cakes entered by schoolgirls, which was very gratifying to the Department. Mr. A. P. Kelsey, of Stoves, Ltd., proposed a vote of thanks to Mr. Cuddon, which was seconded by Mr. G. H. Davies, District Superintendent.

Cookery Demonstrations were held last week by the Cambridge University and Town Gas Light Company at Willingham, a district recently taken over by the Company. There were two demonstrations daily by Mrs. E. K. Slack, of the Radiation Research Kitchen, who used a "New World" gas cooker, with "Regulo" oven heat control. There were also several types of gas appliances on show, prominent among them being the High "Beam" gas fire, with self-lighting equipment. The exhibition was opened on Monday afternoon by the Chairman of the Parish Council (Mr. G. W. Hart). Mr. J. Hunter Rioch, Engineer and Manager, on behalf of the Company, welcomed everybody to the exhibition. There were, he said, already a number of gas cookers in the district, and the Company felt it would be in the interests of the consumers if a practical demonstration were held. Mr. Hart said it was a pleasure to open the exhibition, because the Parish Council had spent something like seven years trying to get street lighting for the village. The Electricity Company let them down, so they approached the Gas Company, who acceded to their request in a business-like manner.

BRITISH GAS FEDERATION

Dinner Next May

The British Gas Federation dinner, which was to have taken place at Grosvenor House on Nov. 2, under the presidency of Lord Dudley, has been postponed until next May.

A Correction

We apologize to Councillor Walter Muter for having represented him, in the tribute he paid to Sir Francis Goodenough at the Bath Conference of the B.C.G.A., as having referred to the words of a "minor poet." Councillor Muter's quotation was, of course, from the minor Prophet Micah.

Amalgamation and Grouping

South-Eastern, Ascot, and Uxbridge.

The South-Eastern Gas Corporation, states the *Financial Times*, has offered to acquire the whole of the issued Ordinary stock of the Ascot District Gas and Electricity Company. The terms of the offer are set out in a circular letter to stockholders in the latter Company, dated Oct. 12.

For each £100 nominal value of Converted 5% Basic Dividend Ordinary stock of Ascot District Gas £128 15s. is offered in cash. Alternatively, eighty Ordinary shares of £1 each and twenty Redeemable Cumulative 4½% Preference shares of £1 each in South-Eastern Gas are offered. If the second alternative is accepted the shares will rank for dividend from Oct. 1.

Since the last dividend paid by Ascot District Gas covered the period to June 30 last, an additional interim dividend at the rate of 5% per annum, less tax, is offered by the Company to cover the period from June 30 to Sept. 30, for its stockholders who accept either alternative. Provision is also made for cash payments in respect of shares which on allotment would be in fractions.

The offer remains open until Oct. 24, and is conditional on acceptance by not less than 55% of the Ordinary stockholders.

An offer has also recently been made by the Corporation to purchase a controlling interest in the Uxbridge, Maidenhead, Wycombe, and District Gas Company. The stockholders have been offered either cash or shares in the Corporation in exchange for their holdings, and it is proposed to increase the authorized share capital of the Corporation in order to make sufficient shares available to carry out the terms of these offers and to provide for future capital requirements.

A Smart Uniform

This is the Sheffield Gas Company's "Mr. Therm" pageboy. The uniform is black, with silver braiding and chromium-plated buttons, and the lettering is in bright red. The "Mr. Therm" on his breast is in red silk outlined with silver.

National Gas Council

Meeting of the Central Executive Board

A meeting of the Central Executive Board of the National Gas Council was held at the Grosvenor Hotel, S.W. 1, on Tuesday, Oct. 13—Sir DAVID MILNE-WATSON, LL.D., D.L., in the Chair.

Coal.—It was reported that meetings had been held in the various districts to consider certain questions arising out of the operation of the Coal Schemes.

Development of Coke Sales.—Reports were received from the Districts with regard to progress made in the formation of Coke Sales Associations.

British Gas Federation—Nomination of Representatives to Serve on the Council.—The following members were reappointed to serve as representatives of the National Gas Council upon the Council of the British Gas Federation for the ensuing year:

Sir David Milne-Watson, LL.D., D.L.
Mr. William Cash, F.C.A., J.P.
Mr. T. P. Ridley, F.C.I.S.
Mr. C. S. Shapley, M.I.Mech.E.
Mr. A. W. Smith, F.C.I.S.

Second Annual General Meeting and Third Annual Dinner.—It was reported that these functions had been postponed *sine die*.

World Power Conference—Third Plenary Meeting at Washington, Sept. 7 to 12, 1936.—It was reported that Mr. E. J. Fottrell had been authorized to attend the World Power Conference at Washington as one of the British delegates, and that Sir Harold Hartley had been reappointed Chairman of the International Executive Council until the next Plenary Meeting, which would probably not take place for another six years.

Annual General Meeting of the National Gas Council.—It was agreed that the next Annual General Meeting of the Council should be held on Thursday, May 6, 1937.

Date of Next Meeting of the Board.—It was agreed to hold the next meeting of the Board on Tuesday, Dec. 8, at 11 a.m.

Coal Utilisation Council.—It was reported that an invitation had been received from the Coal Utilisation Council to attend the Second National Coal Convention to be held on Oct. 29 and 30. The invitation was extended to any members of the National Gas Council to whom the Papers presented might be of interest, and anyone invited to attend might take part in the discussion on the Papers, several of which were of interest to the Gas Industry. It was reported that the British Commercial Gas Association had received a similar invitation. Arrangements are being made for representatives of the Gas Industry to be present at the Convention.

Yorkshire Junior Gas Association

Annual Meeting

The 33rd Annual General Meeting of the Yorkshire Junior Gas Association took place on Oct. 17, at the Fuel Department of Leeds University, under the retiring Presidency of Mr. J. W. Carlton (Shipley).

The annual report, submitted by the Hon. Secretary (Mr. R. H. McCulloch, Sheffield), stated the membership of the Association now numbered 197, an increase of nine during the year. The Yorkshire District Education Committee had continued to function to very useful purpose, the representatives of the Junior Association on that body being Messrs. A. H. Clucas, M.Sc., B. Thorpe, R. N. Webb, and A. Wylie. The report and accounts were adopted on the motion of Mr. T. HAYES (Leeds), seconded by Mr. C. A. NEWHAM (Leeds).

The following officers were elected for the coming year:

President.—Mr. E. R. B. French (Leeds).
Vice-Presidents.—Messrs. J. Richmond (York) and A. W. Elliott (Elland).
Hon. Treasurer.—Mr. T. G. Lewis (Leeds).
Hon. Secretary.—Mr. R. H. McCulloch (Sheffield).
Assistant Hon. Secretary.—Mr. T. Hayes (Leeds).
Three new members of the Council, Messrs. F. Beaumont (Huddersfield), A. Mawson (Otley), and V. J. J. Siddons (Barnsley) were elected from eight nominations.
Representatives on the District Education Committee.—Messrs. A. H. Clucas, M.Sc. (Leeds), J. K. Mitchell (Brighouse), R. N. Webb (Leeds), and A. Wylie (Sheffield).
Hon. Auditors.—Messrs. A. W. Arnold (Bradford) and F. Lodge (Wakefield).

Certain alterations of Rules, introduced by the Council, chiefly concerning qualifications for membership, &c., were formerly approved, on the motion of Mr. RALPH HALKETT, Jnr. (Sheffield), seconded by Mr. R. N. WEBB (Leeds).

Mr. E. R. B. FRENCH, a member of the Association ever since he came to Yorkshire ten years ago and on the Council most of that time, said the day for a Presidential Address would come later. He would content himself that afternoon with expressing appreciation of the honour to himself and also to the Leeds Gas Department. He wished also to thank Mr. C. S. Shapley, General Manager and Engineer to the Leeds Gas Department, for affording him the opportunity of accepting this responsible position. Mr. French then presented the customary Past-President's medallion to Mr. Carlton, his predecessor, as a mark of the esteem of the members and thanks for his services.

Mr. CARLTON suitably responded.

A vote of thanks to all retiring officers and members of the Council was accorded on the motion of Mr. S. H. HUNTER (Sheffield), who complimented the Council on an average of 77% attendance at meetings. Mr. J. RICHMOND (York) seconded.

A hearty vote of thanks to Prof. J. W. Cobb and the authorities of Leeds University, for their customary kindness in affording facilities for the annual meeting, was voted on the motion of Mr. F. FIRTH, A.I.C. (Leeds), seconded by Mr. V. F. SIDDONS (Sheffield). Mr. H. J. HODSMAN, M.Sc., in responding on behalf of the University, said the Association had held the annual meeting there so long that it would seem very strange now if the practice were changed. Mr. Hodsman noted with interest that the amended Rules made precise mention of membership of the Association open to students of the Gas Industry, and he hoped perhaps to be able to influence some new members from among the students at the Fuel Department at Leeds University.

Mr. C. S. SHAPLEY then addressed the meeting on several aspects of the Industry.

Luton's Fine Showrooms

The architectural amenities of Luton have been greatly enhanced by the completion of the new showrooms of the Luton Gas Company.

The imposing Premises Floodlighted.

Centrally situated and directly opposite the new Town Hall, the magnificent new showrooms of the Luton Gas Company were officially opened on Friday, Oct. 16. The opening ceremony was performed by the Mayor of Luton, Alderman Cyril C. Dillingham, J.P., C.C., who was introduced to the many guests of the Luton Company assembled in the fine demonstration theatre by the Chairman of the Company, Mr. R. E. Tomson. Those present included Dr. E. Leslie Burgin, M.P., Parliamentary Secretary to the Board of Trade; Sir Francis Goodenough, C.B.E.; Sir Thomas Keens, D.L., Chairman of the Bedfordshire County Council; Mr. H. Blundell, Dr. J. W. Bone, Mr. W. H. Brown, Mr. H. H. Cooke, Mr. W. W. Merchant, and Mr. D. Seebohm, Directors; Mr. W. Phillips, Engineer and General Manager; Mr. T. F. C. Potterton; Mr. R. J. Rogers; Mr. Roy Summerson, Technical Assistant; Mr. G. E. Wilkes, Distribution and Sales Superintendent; and many others prominent in the Gas Industry or in the public life of Luton and district.

The occasion was a great one in the history of the Company, which now supplies nearly 30,000 consumers with well over 1,000 million cu.ft. per annum. The building will be a lasting credit to those responsible for it and, as the *Luton News* says, it is "a striking contribution to the architectural amenities of the new George Street." The premises are light and cheerful, reliance having been placed on good materials and clear warm colours rather than mere decorative features.

As the new building is much higher than the adjoining shops it can be seen from a distance down the street. For that reason the side walls have been carefully considered, and the general outline is designed to make an effective composition from any angle. A small tower, which is provided for the lift machinery and tanks, is also used for the display of the Company's name, which is floodlighted from the lower roof adjoining the tower. The floodlighting of this tower and the exterior of the showrooms is carried out by Sugg's equipment.

Bronze doors in a marble surround lend dignity to the main entrance, and the windows at street level—some of the biggest in Luton—are framed in the same handsome metal. A glance through them gives an impression of grace and beauty that invites closer inspection. Inlaid marbie floors, plaster walls and ceilings in pastel tints of cream, light green, and terra-cotta give the interior a warm and pleasing atmosphere, modern, yet artistically correct. The effect is heightened by top-lighting, which distributes light evenly and without shadow and leaves the walls entirely free for show space.

A glance round this first showroom, and one's attention is held by a display of gas fires in an alcove, slightly raised from the rest of the flooring, on the left-hand side. Here, in a setting distinguished by excellent taste in decoration are seen the latest panel fires and other types of fire. One sees them not as mere utility fittings—things the gas fire has long ceased to be—but as definite parts of a room's furnishing and decoration. The rest of the room is used to display gas cookers, refrigerators, radiators, and standard lamps.

Intercommunicating Rooms.

The showrooms are arranged as a series of intercommunicating rooms, each specially designed for the purpose for which it is intended. So that off the next room—which incidentally has a floor design in marble that will be greatly admired—is a smaller showroom devoted to water heating appliances. The smaller heaters are fixed above a long metal sink, and for demonstration purposes the temperature of the water is registered by a finger on a large dial.

Pedestal sinks with hot and cold water taps have been built in for use in conjunction with the larger units. Also showing here are washing machines and airing cupboards. Opposite this part of the showroom is staged a display of gas fires and lighting fittings.

At the rear of the building, and reached by way of these showrooms, are offices for the staff, rental clerks, and others. There is a handsome counter where accounts may be paid. Gas fires and other appliances are unobtrusively displayed.

The general impression of spaciousness, warmth, and light which characterize the whole building is nowhere more strongly felt than here when one looks back towards the main entrance through the clean lines and delicate colourings of the other showrooms.

The heating of the building comprises two separate installations—viz., one a low-pressure hot water heating system serving radiators for supplementary heating on the lower floors and the complete heating of the offices on the upper floors. The boiler provided for this purpose is a No. 2 Series "Rex" gas-fired type of seven sections (manufactured by Messrs. Thomas Potterton (Heating

Part of the Ground Floor.

Engineers), Ltd.) with an output of 504,000 B.Th.U. per hour. The system is designed for accelerated action, with a considerable proportion of circulation by gravity, the pump being fitted in the heating chamber.

Automatic control of the gas is provided, with a bi-metal thermostat operated on water temperature and an air temperature thermostat with a heat detector in the showroom. This can, of course, be used for demonstration purposes. The other heating is by the Plenum system, with a main air heating battery and two booster batteries in the duct work. The fresh air is drawn down from the roof,

passed through the heating batteries, and discharged at various positions in the showrooms. These batteries are also heated by low-pressure hot water through a second Potterton No. 2 Series "Rex" gas-fired water heater of seven sections similar to that for the radiator system, and this section is also accelerated.

There are, therefore, two separate installations, each comprising a boiler and accelerator, but these are so coupled that either boiler can be used either for the radiator or air heating systems, or jointly at a lower temperature for both should one boiler be out of action for maintenance purposes, and the accelerators are cross coupled and valved in a similar way.

The boilers are mottled enamel finish, and are fitted with automatic cut-offs which shut off the gas in case of flame failure, and act as a simple lighting device. The hot water supply system is served by a special No. 2-2 "Emperor" thermal storage set, which comprises a 75-gallon lagged storage cylinder and twin No. 2 "Empire" gas-fired water heaters, the whole finished in ivory white enamel. Circulations are carried from the apparatus to points adjacent to the various draw-offs serving hot water for the demonstration room and the various lavatory points throughout the showrooms and offices on the upper floors.

The whole of the boiler equipment was installed by the makers, Messrs. Thomas Potterton, including the "Rex" boilers for heating, and the hot water supply apparatus, which are fitted in the basement heating chamber. Here the accelerators and gas meter are also fitted, the whole forming a complete plant, demonstrating the simplicity and cleanliness of gas-fired systems. The Plenum system was carried out by Messrs. J. Jeffreys, Heating Engineers, Barrons Place, Waterloo Road, S.E.

A striking feature of the new premises is the demonstration theatre which will seat 150 people in comfort. It has a stage fitted up as a model kitchen, one of the kitchen fittings being a built-in gas refrigerator. The wooden floor rises in tiers towards a wide sweep of window that allows perfect natural lighting. And after dark the lighting is still perfect—thanks to gas. A small space is set aside for afternoon tea or for enquiries, and there is a fully equipped kitchen adjoining.

The architect is Mr. H. Austen Hall, Consulting Architect to the B.C.G.A. The builders are Messrs. Seaward Bros., of Luton.

The showrooms were built in two sections. Two shops adjoining the old showrooms were demolished and in their place rose the first half of the new showrooms. The staff moved into the completed part of the new building, and the old showrooms had to be demolished before the new showrooms could be completed.

Luncheon Speeches.

Following the opening of the new showrooms the visitors were entertained at luncheon by kind invitation of the Directors of the Luton Gas Company at the George Hotel, the Chair being taken by Mr. R. E. TOMSON, Chairman of the Luton Company.

The Loyal Toast having been honoured, Mr. E. LESLIE BURGIN, LL.D., Member of Parliament for Luton, and Parliamentary Secretary to the Board of Trade, proposed "The Gas Industry" in a characteristically witty speech. The Luton Gas Company, he observed, realized that it was very good salesmanship to have an impressive showroom, and the Gas Industry heartily concurred with that view. "Your beautiful new showrooms," he said, "on which I congratulate you, are evidence of the fact that your Company moves with the times." He coupled with the toast the name of Sir Francis Goodenough.

Responding to the toast, Sir FRANCIS GOODENOUGH, C.B.E., who was received with prolonged applause, thanked the company for the kind way in which they had welcomed him. He was glad to be at Luton on that historic occasion. The Luton Gas Company was a very progressive undertaking and they all congratulated it upon its new showrooms. It was very much to the credit of the town that such premises should be opened. Regarding the strength of the Gas Industry to-day, he recalled seeing a cartoon in 1878 which depicted gas being "snuffed" out by electricity. To-day, however, the Industry was going stronger than ever; it was indeed taking a long time to be "snuffed" out!

"Luton and District" was proposed by Sir THOMAS KEENS, D.L., Chairman of the Bedfordshire County Council, who drew attention to the wide industrial interests of Luton, which included such diverse products as beer, straw hats, refrigerators, motor cars, and gas stoves, the Davis Gas Stove Company having, he believed, the largest casting floor in the Kingdom. All these industries were catered for by the privately-owned Gas Company, which had also largely helped to solve the grave problems occasioned by the rapid growth of the population of the town in recent years. He coupled with the toast the name of the Mayor of Luton, Alderman Cyril C. Dillingham, J.P., C.C., who is the son of a former Mayor of Luton, and was now in his second year of office.

Alderman CYRIL C. DILLINGHAM, Mayor of Luton and Chairman of the Corporation Electricity Committee, replying to the toast, said it was a very great pleasure and his privilege to do so. He then went on to refer to the progressive policy of the Luton Gas Company. Any development was anticipated and a supply of gas was always available to meet all new requirements. In the southern counties, he said, Luton was acknowledged to be one of the best run undertakings in the country.

An Excellent Start

Illuminating Engineering Society's Opening Meeting

If numbers and enthusiasm at an opening meeting of a session are pointers for its success, then the Illuminating Engineering Society are in for a busy and profitable winter. The attendance at the Opening Meeting on Tuesday, Oct. 13, was a record. As last year, this meeting was held, by kind invitation of the Electric Lamp Manufacturers' Association, at the Lighting Service Bureau, 2, Savoy Hill, Strand, W.C. 2.

At the outset the Chair was taken by the retiring President, Mr. A. Beuttell. The minutes of the last Meeting were taken as read, and the Secretary, Mr. J. Stewart Dow, read the names of new applicants for membership.

Mr. Beuttell then observed that his last duty as President was a pleasant one, insomuch as it was to induct the New President, Mr. A. Cunnington. Mr. Cunnington was already so well known to the members that he needed little introduction. There was certainly no need for him to be eulogized. He did, however, wish Mr. Cunnington a very successful year of office.

In taking the Chair, Mr. Cunnington referred to the good services of Mr. Beuttell which he had always rendered so freely on behalf of the Society, and particularly during his year as President. He had always been regarded as a "leading light" on the Committee.

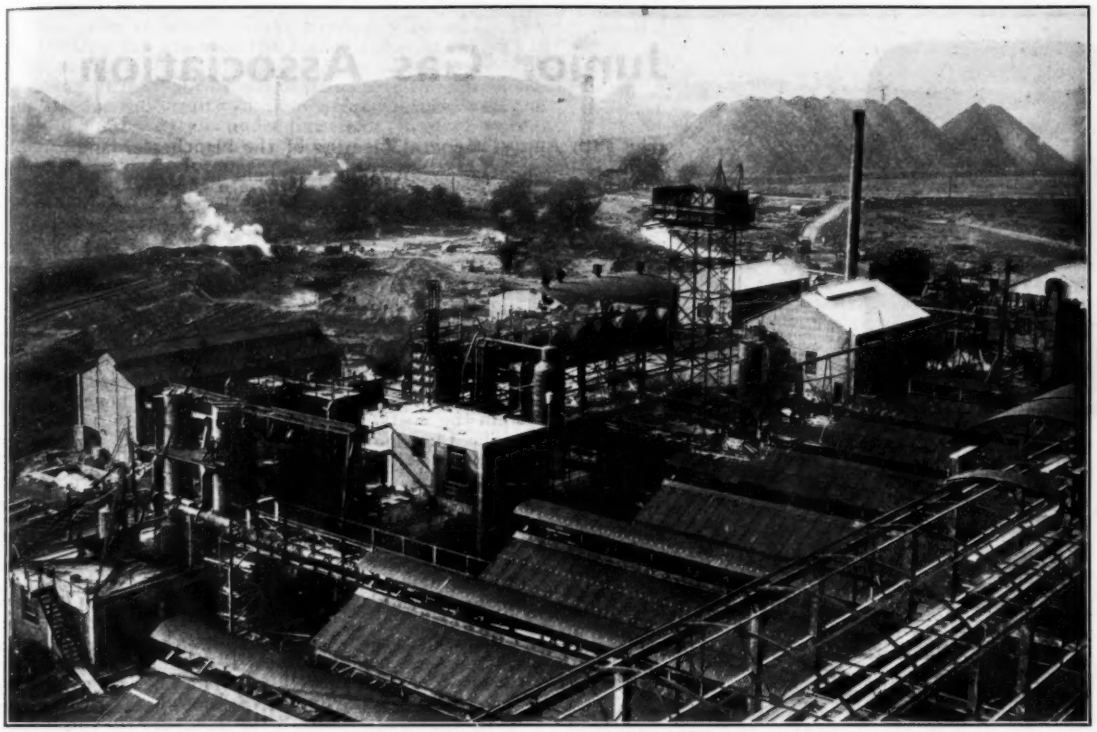
In the course of his Presidential Address, Mr. Cunnington made an appeal to owners of large buildings in towns to have their premises steam-cleaned before the Coronation celebrations. Lighting engineers were planning extensive schemes for floodlighting and other illuminations for that occasion, but the detrimental effect of grime in some of the large towns was so great that effective floodlighting would be almost impossible unless a general "spring-cleaning" of large buildings was undertaken. A wide response to this appeal would not only lighten the task of the lighting engineer, but would improve the daytime aspect of our public buildings.

Another point of general interest referred to by Mr. Cunnington in his Address was that of the necessity for trained independent lighting engineers to report to municipal authorities on their lighting schemes. It was a pathetic spectacle, he observed, to see a lighting committee having to accept the figures of lighting costs submitted by a local gas or electricity company because they had no trained and independent expert to whom they could turn for a proper report. In entering a strong plea for the appointment of these independent experts, Mr. Cunnington said that while some of the smaller local authorities could not justify the expense of a full-time lighting engineer, they could then all obtain the services of a consulting lighting engineer to report on any specific scheme. Public lighting authorities were by no means the only bodies that should employ lighting experts. There were similar opportunities in the departments of authorities concerned with docks and harbours, and in many of the large organizations and departmental stores.

Mr. Cunnington also dealt briefly with the subject of railway station lighting. He showed by diagrams that while electricity had made large strides during recent years in the London area, it was mostly at the expense of oil, &c., and that gas had suffered little as the result of that expansion of electricity. In rural districts there is room for considerable expansion of the use of gas, for many stations are out of reach of the mains and still depend upon oil, &c. He also made a plea for the standardization of charges for gas and electricity, pointing to the work holding companies might effect in that direction.

The President was thanked for his Address on the proposition of Mr. Beuttell, which was carried with acclamation. Exhibits were then demonstrated. These included an automatic emergency gas switch (by Messrs. Wm. Sugg and Co., Ltd), and a burner ignited by the catalytic method (by the Gas Light and Coke Company). Improved forms of control for public lamps, including catalytic ignition, air raid valves, &c., were demonstrated by the Horstmann Gear Company, Ltd. New forms of gas lamps were demonstrated by Mr. W. J. G. Davey, of W. Parkinson & Co., Ltd.

New "Coalite" Plant



On Tuesday of last week, Colonel W. A. Bristow, Chairman and Managing Director of Low Temperature Carbonisation, Limited, invited a number of guests to a preliminary view of the Company's latest plant for the production of "Coalite" now nearing completion at Bolsover. The first part consists of 288 retorts with a capacity for dealing with 500 tons of coal per day.

at Bolsover

The plant, the whole of which has been made in the United Kingdom, is not only the largest in the world for the production of low-temperature smokeless fuel, but it has been erected in record time, and embodies many new features which have not previously been incorporated in any plant of this description.

Colonel Bristow headed the tour of inspection, and the working of the installation was explained to the visitors.

The Bolsover Works are the fourth built by Low-Temperature Carbonisation, Limited. The first plant has been working continuously, day and night, at Barugh, near Barnsley, since July, 1927; the second has also been working continuously, at Askern, near Doncaster, since July, 1929; and the third Coalite plant, which was built at East Greenwich, on the site of the South Metropolitan Gas Company—by whom it is operated under licence—was started in 1930 and has operated without interruption since.

Since 1927 the Company has carbonized approximately 2,000,000 tons of coal, from which have been produced 1,400,000 tons of Coalite and 180,000 tons of coal oil and coal petrol. The four plants will now be able to carbonize 1,600 tons of coal per day, which will give an annual output of 380,000 tons of Coalite and over 12,000,000 gallons of petrol and coal oil.

The coal used at Bolsover is that generally known as washed smalls, being in size from half-an-inch down to powder. After leaving the washer at the colliery the coal is taken in wagons to the wagon tippler at the Coalite plant where, by an ingenious contrivance, in addition to being tippled, the wagon of coal is weighed both full and empty.

From the tippler hopper the coal is transported by a band conveyor to the 16 coal bunkers, where it is sorted and drained. The total capacity of the bunkers is 2,500 tons, and coals from different seams are sorted in separate compartments ready for blending.

When the coal is drained sufficiently, supplies are drawn from the bottom of the bunkers and there automatically placed on a mixing belt and conveyed mechanically to the overhead bunkers directly over the tops of the eight batteries of retorts. A coal breaker has been installed in this line so that if necessary large coal can be used and broken to the requisite size on its way to the bunkers.

From the overhead bunker the coal is passed to travelling skips which are suspended on rails over the tops of the retorts, and each skip loads 18 retorts in a line. The retorts are of a special alloy steel, each standing in the centre of a radiation chamber from the walls of which it is heated. No flame comes in contact with the retorts and, owing to the special material and method of operation, they can stand many years continuous operation at high temperatures.

After the carbonizing period of four hours the coke is ejected into hermetically sealed cooling chambers, where, after four hours' cooling, it is discharged on tip-tray conveyors to the main conveyor belts, which, in turn, feed the screening and loading plant.

The gas emitted from the retorts during the carbonizing period is led through the separate water-cooled off-take pipes into the hydraulic mains, where most of the oil is condensed. The remainder passes on to electro-static precipitators, where it is subjected to a static discharge of 60,000 volts. In addition to thoroughly cleansing the gas, this has the effect of raising the performance value of the petrol. The gas, after leaving the electro-static precipitator, passes to the ammonia plant, where the ammonia is extracted from the gas by washing with dilute sulphuric acid.

On leaving the ammonia plant, the gas is cooled by being passed through water-cooled condensers. It then proceeds to a static washer which extracts the petrol, passing it to a still where the wash oil is removed, the crude spirit then being pumped to the storage tanks.

The retorts are heated by the residual fixed gas produced in the process, but there is also an independent gas producer plant installed for preliminary heating up and to act as a stand-by.

There are nearly four miles of railway lines for handling the coal and other products of the works, which will be completed by the addition of a coal oil distillation plant and a plant for the production of Diesel oil and tar acids.

After the tour Colonel Bristow explained the direction of future developments of low-temperature carbonization.

Manchester and District Junior Gas Association

The New President, T. Caldwell, of Widnes

The 38th Annual General Meeting of the Manchester and District Junior Gas Association was held at Widnes on Saturday, Oct. 10, 1936.

Ninety members paid a visit first to the Gas-Works and pumping station at Widnes, where great interest was shown in the plant which supplies the town with water. The pumps, which are capable of delivering 2,600,000 gallons of water per diem, were installed in 1908 by the late Mr. Isaac Carr.

The Gas-Works, however, claimed the greater share of interest. In the retort house attention was paid to the experiments that are in hand, particularly the manner in which steam is injected into the horizontal retorts. The coke breaking and grading plant, which was erected some three years ago, was also inspected.

After the visit, the members were entertained at tea by the Widnes Gas and Water Committee, and were welcomed by the Mayor.

Mr. A. K. COLLINGE thanked the Mayor for his welcome, remarking that those who so kindly and willingly entertained the Juniors, and invited them to visit their Works, performed a very valuable service to the Gas Industry.

Mr. J. GRAHAM (Lancaster) proposed a vote of thanks to the Chairman and members of the Widnes Gas and Water Committee and their Engineer, Mr. C. E. Dickinson. He said that Widnes had always been a progressive Undertaking since Mr. Isaac Carr was the Chief Engineer. It has also been the training ground for many eminent Gas Engineers. To-day the Undertaking was still in the van of progress.

Mr. R. L. GREAVES (Stockport), in seconding the vote of thanks, stated that the facilities afforded to the Juniors were very much appreciated, and great benefit was derived from the visits.

The Chairman of the Gas and Water Committee (Mr. Williams) in reply to the vote of thanks, stated that the Widnes Gas Undertaking had become known in all quarters for its cheap gas. There was actually present a member of the staff who had worked for the Undertaking for 53 years and who remembered Mr. Isaac Carr coming to the Works. The Gas consumption throughout the country was increasing, and last year Widnes had an increase of 10%. Every house in Widnes had gas except one.

After tea, the election of officers and members of the Council took place. Mr. A. K. COLLINGE installed his successor, Mr. T. Caldwell, of Widnes, as President of the Association for the 1936-37 Session.

Mr. CALDWELL thanked the members for the honour they had conferred upon him in electing him President. He paid a warm tribute to the efficient manner in which the retiring President had carried out his duties, and presented Mr. Collinge with a pair of binoculars as a memento of his year of office.

The following officers were appointed:

Senior Vice-President.—A. K. Collinge (Preston).
Junior Vice-President.—J. Albinson (Partington).
Hon. Secretary.—F. Johnston (Manchester).
Hon. Treasurer.—E. Kenyon (Middleton).
Hon. Auditor.—F. A. Collier (Oldham).

Presidential Address of Thomas Caldwell, M.Eng., Assoc.M.Inst.Gas E.

At a meeting of this Association, held towards the end of the last Session, the question "Can the present rate of progress in gas sales be characterized as satisfactory?" was debated upon. I was asked by the President to join in this debate and speak from a negative point of view. Consequently, I studied the national statistics of gas sales for past years, and ascertained that national progress in sales of gas had, in fact, been reduced almost to a standstill. Therefore, the only possible conclusion I could arrive at, was that this condition was not satisfactory, and a practically unanimous vote of the members present was to that effect.

During the course of the debate, Mr. Albinson, now President-Elect, made an observation with which I am certain the whole of the British Gas Industry is in entire agreement. "Reduce the price of gas to a sufficiently low level, and the rate of progress in Gas Sales will soon be satisfactory again."

"How to reduce the price of gas" is therefore the problem of vital importance which confronts gas undertakings to-day.

As President of this Association and an official of the Widnes Gas Undertaking, which under the administration of the late Mr. Isaac Carr, M.Inst.C.E., at one time enjoyed the enviable distinction of supplying gas at the lowest price in the world, I feel it incumbent upon me to relate any experience I have had, and to express any views I hold which may contribute towards the attainment of our object:

CHEAPER GAS.

Students of the Gas Industry studying to qualify for positions as gas engineers and managers, have until quite recently regarded it as being essentially comprised of two branches—first, Manufacture; second, Distribution—mainly because the study of these subjects had evolved to the scientific stage. New sciences and new branches of sciences are continuously developing, and this must inevitably go on while finite minds grapple with infinite problems. The Gas Industry is not an exception in this regard. With the ever-increasing application of gas to domestic and industrial requirements, and the already tremendous numerical increase and scientific development of appliances, the sale of gas for both domestic and industrial service has developed into a scientific branch of our Industry, not only deserving but definitely requiring the undivided attention of most able and specially trained personnel.

The financial administration as distinct from all other administration is generally entrusted to men well qualified in the sphere of finance. In the case of municipally owned undertakings, the Treasurer as Financial Officer guides the Council's policy. Independent action in this administration may sometimes be harmful to an undertaking's prospects. It is advisable, therefore, for the Engineer and Manager to be sufficiently versed in the rudiments of this branch of the Industry to be able to collaborate effectively in evolving the financial policy calculated to serve the best all-round interest of the undertaking.

It is under these four headings:

1. Manufacture,
2. Distribution,
3. Sales of Gas,
4. Financial Administration,

that I desire to relate my experience and express views which I consider will, if acted upon, help to increase gas sales as a consequence of a decrease in price coupled with increased efficiency of service.

Manufacture.

The manufacturing cost of gas, in common with that of all other commodities, must obviously have a direct bearing on the price at which it may profitably be sold. The cost of putting the gas into the holder (*i.e.*, into stock) is regarded as the manufacturing cost.

In passing, it may not be out of place here to express the desirability for uniformity of item nomenclature, and the inclusion of similar details under like items; in other words, a standard form of accounts. This would simplify comparisons between the accounts of various undertakings.

It requires only a brief consideration of the items included in the cost of manufacture to appreciate how variable these may be from year to year.

Quite recently there has been a very appreciable increase in the price of coal.

All gas workers' wages have been increased and holidays extended.

The annual cost of repairs to plant varies enormously. Last year the repairs to one holder at Widnes cost approximately £4,000. Repairs to retorts in any one year may exceed that of another by a similar amount. Hence the holder cost in any particular year is not a measure of the efficiency of the administration.

During the past fifteen years it has been necessary to incur very heavy repair expenditure at Widnes to bring the whole of the manufacturing plant up to proficient condition so that a demand equal to full capacity could be met. We anticipate that the period of exceptionally heavy expenditure is nearing the end, and that the benefit of reduced expenditure in this regard will subsequently be shared by the Undertaking and consumers.

With all plant in a good state of repair, it should be possible to budget for a reasonably constant repair expenditure from year to year. Unforeseen heavy expenditure might then be met from a reserve fund created for this purpose.

On the income side the prices obtainable for residual products depend upon the inevitable law of supply and demand, trade conditions being the chief influencing factor. Cultivation of the domestic market for coke will tend to stabilize the price of the Industry's most valuable by-product.

The application of sound business methods to the administration of all items of expenditure and income is essential if the lowest manufacturing cost is to be attained.

There is an old maxim that profits are made or lost in the retort house. It will, however, be apparent from the foregoing that there are too many other influential factors for this to be exclusively true. Continuous improvement in carbonizing efficiency can, however, play a very big part in reducing the manufacturing cost of gas.

Not many engineers have the privilege of selecting the plants they have to control, and so have to be content with endeavouring to obtain improved results with the plants at their disposal.

The carbonizing plant at the Widnes Gas-Works comprises sixteen settings of eight horizontal retorts, each 24 in. by 20 in. ⏢ section and 20 ft. through. One retort when fully filled throughout its effective carbonizing length, holds approximately 1 ton of slack such as is generally carbonized.

From the time the plant was put into operation in 1913 until June, 1933, the system of working in the retort house was as follows:

Two eight-hour shifts . .	Day shift from 8 a.m. to 4 p.m. Night ,, ,, 8 p.m. to 4 a.m.

Period of distillation, 12 hours.

The number of men actually employed charging and discharging retorts during the above shifts was:

Two on the charging side .	1 driving the charging machine 1 lidding up mouthpieces
Two on the discharging side	Quenching and raking over the coke into skips, firing furnaces, and lidding up

One driving telpher (conveying coke).

There were, therefore, five men employed for each shift, or ten men for the two shifts.

There were also three shift men who clinkered the producer furnaces, and three shift foremen, making a total number of sixteen shift men employed in the retort house. In the summer months, if the number of working beds dropped to eight or less, the foreman did the telpher driver's work in addition to his own, and the number of stokers was reduced to fourteen.

In addition to the retort house labour, men were employed picking the partially burned coke from the furnace pan ash. This provided regular work for two men, and spare time work for other men whose set tasks did not keep them fully occupied. The annual cost of coke picking was about £350, and this was charged against carbonization.

Each shift of men charged the four rows of retorts of all working beds in eight hours, at the times and in the order stated:

Day shift—			
Top row . .	from	8 a.m. to 10 a.m.	Producer furnaces charged
Bottom row .	,,	10 a.m. to 12 noon	
Second row .	,,	12 noon to 2 p.m.	
Third row . .	,,	2 p.m. to 4 p.m.	Producer furnaces charged
Night shift—			
Top row . .	from	8 p.m. to 10 p.m.	Producer furnaces charged
Bottom row .	,,	10 p.m. to 12 midnight	
Second row .	,,	12 midnight to 2 a m.	
Third row . .	,,	2 a.m. to 4 a m.	Producer furnaces charged

The above were the actual times of commencing the charges but not those of finishing. Even with all sixteen beds in operation, reasonable time elapsed, for rest and meal periods, between the times charging operations ended and commenced. The time taken to charge a row of retorts was protracted to suit the number of beds working, with a view to giving the most uniform rate of gas production.

The producer furnaces were fired every six hours, and clinkered three times during each eight-hour shift, which occasioned a more than desirable variation in the depth of fuel bed. From October, 1920, onwards until June, 1933, only one charging shift was worked on Sundays, commencing at 12 noon and finishing at 8 p.m. The period of time which elapsed between the finish of the Saturday night shift at 4 a.m. Sunday, and the commencement of the Sunday shift at 12 noon, was eight hours, so that the charges of the Saturday night shift were carbonized for sixteen hours.

The Monday day shift commenced at 5 a.m., which meant that the Sunday charges were carbonized for a period of seventeen hours. Charges of slightly heavier weight, but not by any means proportional to the longer period of distillation, were put into the retorts throughout the Saturday night and Sunday shifts.

On Mondays the day shift	commenced at	5 a.m.
and the night shift	,,	,, 6 p.m.
On Tuesdays the day shift	commenced at	7 a.m.
and the night shift	,,	,, 8 p.m.

the times of shifts then returned to normal for the remainder of the week.

While the single Sunday shift effected economy in stokers' wages (the more so because of the higher rates paid for Sunday labour), and, as a consequence of distilling the very last traces of volatile matter out of the coal, gave a higher gaseous yield per ton of coal carbonized, it also resulted in the following very undesirable effects:

(1) Very wide range between maximum and minimum rate of gas production.
(2) Very varying calorific values.
(3) Stopped ascension pipes, heavy tars, and naphthalene blockages at very frequent intervals throughout the condensing and purification plant.

Dissatisfaction with the many undesirable features of the above system led to investigations being made with the object of introducing an entirely different one, bearing the following ideals in mind: Constant quality; constant rate of gas production; maximum yield of gas of specified quality; minimum wear and tear on plant; minimum labour; constant conditions in producer furnace, maintaining uniform heat in combustion chambers and settings.

For maximum gaseous yield the average weight of coal charged into a retort with twelve hours as the distillation period was 12½ cwt., and the retorts would hold a ton.

After much time and thought had been devoted to the scheme, the following system of working was evolved.

Three shifts per day are worked instead of two, with one foreman and four other stokers per shift, the foreman doing the restricted amount of telpher work. The cellar men who clinkered the furnace fires and the men who picked the coke from the pan ash were allocated other work. The number of stokers employed is fifteen all the year round instead of sixteen in the winter and fourteen in the summer. The same weight of coal per day is carbonized in the same number of beds with a less number of charges in the proportion of three now to four previously. The retorts are charged at more regular intervals, and slightly more work is divided among three shifts instead of two. Each shift charges only half the number of retorts formerly charged, but each stoker, except the foreman, clinkers the fires of one-quarter of the number of beds working, and picks the coke from the ash of the fires he clinkers. This has the added advantage of dispensing with the furnace pan ashes immediately, and consequently helps to keep the works much more tidy.

The system was put into operation at the end of May, 1933, and the following advantages were soon apparent:

(1) Rate of gas production is practically constant throughout the day, putting a much less constant load than the previous maximum on all plant, resulting in greatly reduced pressure and all plant working well within its capacity.
(2) The calorific value varies between much closer limits.
(3) Uniform speed of exhauster with constant air intake.
(4) Uniform rate of benzole washing.
(5) Much less frequent blockages of carbonizing, condensing, and purification plant.

During the year ended March, 1933—the year prior to that in which the new system was put into operation—the make of gas was 12,707 cu.ft. per ton, and the quantity of benzole produced *nil*.

The production of benzole was commenced in April, 1934.

Under the new system the make per ton increased in the year ended March, 1936, to 13,204 cu.ft., and in addition about 1¾ gallons of benzole per ton of coal carbonized were produced.

The crude benzole made during the year ended March 31, 1936, was 56,435 gallons.

Taking the calorific value of this crude benzole to be 1·5 therms per gallon, the equivalent number of therms and cubic feet (declared calorific value 475 B.Th.U. gross) are:

Therms	84,652
Cu.ft.	17,821,473
Coal carbonized (tons)	32,760
Cu.ft. of gas equivalent to benzole yield per ton of coal carbonized	544
Plus increased make of gas per ton coal carbonized (13,204 − 12,707)	497
Equivalent total increase in make of gas per ton coal carbonized consequent upon the introduction of the new system of working in the retort house	1,041

With the hope of still further increasing the gaseous yield per ton of coal carbonized, water gas is being produced to act as a diluent of the coal gas, by steaming a proportion of the charges in the retorts.

The present system of carbonizing is particularly suited to the application of steaming, as it is desirable to have the retorts heavily charged and the gas well distilled off before commencing to steam. The present charges of about 16 cwt. can be completely distilled off in 16 hours with a lower combustion chamber temperature than 12½ cwt. charges could be distilled off in 12 hours. With the combustion chamber temperature increased to 1,450° C., complete distillation of 16 cwt. charges is accomplished in 14 hours. Steam may then be admitted for the last two hours of the carbonizing period.

The process is only in its experimental stage, and it is too soon to express a definite opinion on its advantages or otherwise. Indications, however, are promising, and we hope that sufficient data may be available to enable Mr. Hardman, Chemist at the Widnes Works, to give a Paper on this subject towards the end of the present session.

Benzole.

The production of benzole in the recently developed type of plant has proved a very efficacious means of reducing the cost of gas manufacture. Gas produced in horizontal retorts yields a much larger quantity, and much better quality benzole, than does that produced by vertical retorts, and the economic considerations are apparently quite different for the two types of plant.

At Widnes we are well pleased with what we consider to be a very beneficial process. The plant was installed in April, 1934, as an adjunct to the existing naphthalene washing plant. Both crude and rectification plants were originally installed.

The rectification plant, which was of the continuous type, and only in its experimental stage, was installed on trial, and on the understanding that if not entirely satisfactory it was to be removed and its cost credited. Refining on so small a scale proved to be unprofitable, as the difference in price of crude and refined benzole was not so great as anticipated. The refining plant was accordingly removed.

The yield of crude benzole obtained is approximately 1¾ gallons per ton of coal carbonized; it is of excellent quality, the specific gravity being 0·882, and 82% distils off up to 120° C. This result is obtained washing with what is commonly referred to as spindle wash-oil. A larger yield, or rather make, has been obtained washing with ordinary gas oil, but this is negatived by a much higher quantity of wash-oil being required for making-up purposes, and also trouble with plant stoppages as a consequence of the oil sludging.

There has been so much said and written of a contentious nature relative to the economics of benzole production, that I considered it desirable to include a statement showing "The Estimated Cost of Benzole Production" at Widnes for the year ended March 31, 1936.

The Widnes Gas-Works is capable of sending out about 550 million cu.ft. of gas yearly, but the present send-out is approximately only 410 million cu.ft. If benzole was not produced, the capital expended on the proportionate capacity of plant occupied in producing the gas removed by benzole washing would be idle. It may also be said that the outstanding capital on gas manufacturing plant is so small, that the proportion (it might possibly be argued) which should be allocated to benzole production would be negligible.

It will be observed from the Statement that the net coal figure is very low, and that consequently the "Net Cost of Coal Used in the Production of Benzole" is low also.

WIDNES CORPORATION GAS AND WATER DEPARTMENT.

ESTIMATED COST OF PRODUCING BENZOLE FOR THE YEAR ENDED MARCH 31ST, 1936.

The items of Expenditure and Income referred to in this statement are those only affected by the production of benzole.

YEAR ENDED MARCH 31st, 1936. GALLONS BENZOLE PRODUCED—56,435

DETAILS OF THE COST OF PRODUCING BENZOLE.	£	£	PENCE PER GALLON.
Expenditure on Coal when Benzole is produced	27,127		
LESS Revenue from Residuals when Benzole is produced (this does not include Revenue from Benzole)	18,696		
NET Coal when Benzole is produced (excluding Revenue from Benzole)		8,431	
Expenditure on Coal when Benzole is not produced	26,056		
LESS Revenue from Residuals when Benzole is not produced (this does not include Revenue from Breeze used in: he production of Benzole. This item is shewn separately hereunder)	17,946		
Net Coal when Benzole is not produced		8,110	
Net Cost of Coal used in the production of Benzole		321	1·365
Extra Wages discharging Coal		11	·047
Wages attending Benzole Plant		15	·064
Extra Cost of Repairs to Retorts		65	·277
Extra Cost of Repairs to Machinery		95	·404
Repairs to Benzole Recovery Plant		51	·217
Water used in the production of Benzole		91	·387
Breeze used in the production of Benzole		93	·395
Annual Loan Charges (15 years' annuity on £1,670. Interest rate, 3½%)		144	·612
COST OF PRODUCING BENZOLE		886	3·768
GROSS Revenue from Benzole		2,726	11·593
LESS Cost of producing Benzole		886	3·768
NET PROFIT FROM BENZOLE		1,840	7·825

Coke.

Coke is by far the most valuable by-product of the Gas Industry, so that its proper and most profitable use is a matter of great importance.

Specially designed domestic coke grates are now on the market which burn graded gas coke quite efficiently; furthermore, the coke is ignited by means of a gas burner which is an integral part of the grate.

It is the duty of gas undertakings to educate the general public to the fact that good, clean, and graded gas coke is a smokeless fuel which, when burned in efficient appliances, gives out almost as much heat as an equal weight of good house coal. It should, then, be possible to obtain for coke a price not very much less than that obtainable for good quality house coal. With house coal costing £2 per ton delivered, good quality gas coke should be an economical proposition at 30s. to 35s. per ton delivered.

In a Paper which I read before this Association in 1927, was shown an analysis of the purposes for which coal was used in this country at that time. Nearly 20% was used for domestic purposes, and almost 40% was bulked under the heading of "other purposes."

All interested in thrift, the conservation of our national resources, and a cleaner atmosphere, must appreciate the advantages of the more abundant use of coke displacing much of the coal still wastefully burned.

Coke Handling Plant.

The coke handling plant at Widnes was completed and put into operation in March, 1934. The coke dealt with by this plant is conveyed from the retort house by telpher. It is partially quenched by the application of water from hosepipes while leaving the retorts, and afterwards completely quenched by total submersion in a dipping tank. The skips of coke are then returned to the retort house floor, and allowed to drain and dry for nearly two hours.

By this means the moisture content is considerably reduced, and coke now supplied from the hoppers contains approximately 5% moisture.

The quantity of coke that passed through the plant during the first twelve months of operation was. 5,809 tons, 34% of the make

The quantity of coke that passed through the plant during the second twelve months—*i.e.*, during the twelve months ended March 31st, 1936—was 9,454 tons, 52% of the make

It is anticipated that during the current year nearly all the coke made will be dealt with by the plant. Last year the local sales of coke were 50% more than during the previous year.

The handling and repair costs of the plant for the year ended March 31 last were 9·2d. and 6·8d. per ton respectively—*i.e.*, 1s. 4d. per ton in all. Having regard, however, to the newness of the plant, the repair cost is on the low side, and is not really indicative of what the cost will be over a period of years.

Tar.

The organized schemes between producers and distillers of tar for the marketing of its products, have done much to ensure an equitable price being obtainable. Provided these schemes are efficiently administered, it should be to the advantage of gas undertakings to participate therein.

Sulphate of Ammonia.

Only in exceptional circumstances does the average price at present obtainable for sulphate of ammonia warrant its manufacture by gas-works process. The capacity for production of synthetic sulphate of ammonia, which can apparently be manufactured much more cheaply, is far in excess of the demand. It appears, therefore, that there is very little hope of sulphate of ammonia ever again becoming a profitable by-product of gas-works.

For many years the profit on this by-product at the Widnes Gas-Works was equivalent to about 3d. per 1,000 cu.ft. of gas sold. It would be interesting to know what percentage return is being shown on capital spent on plant for production of sulphate of ammonia.

Distribution.

It is an accepted maxim that satisfied consumers are the best advertisement. Provided that the quality of gas supplied is beyond reproach, the responsibility for the satisfaction of the consumers devolves almost entirely upon the distribution departments. Distribution workers should always bear in mind that by their personal contact with consumers, they impart a definite impression of the kind of service which the Gas Industry has to offer. Ideas of service in all spheres of industry are undergoing revolutionary changes, and if the Gas Industry is to keep in the front line of the march of progress, its idea of service—which unfortunately has been dulled by the influence of a monopoly—must undergo radical changes. Even in the light of the harmful effects suffered in the past as a consequence of omission in this regard, I consider present efforts inadequate to meet the keen competition which the Gas Industry is fighting to-day. In stating this I have in mind that in order to give most efficient and satisfactory performance gas appliances require regular maintenance. How many gas undertakings have what may be termed efficient maintenance schemes?

For ideal adjustment, the majority of gas appliances require constant pressure supply. Varying pressures in the supply mains are, under present conditions, practically unavoidable, and yet, what is the proportion of gas services fitted with pressure governors?

A particularly efficacious means of maintaining the goodwill of the consumer—an inestimable asset—is keeping the cost of the highest standard of work at the lowest possible level. The only means by which this may be achieved is by the employment of well-trained and keen workmen, and work done should frequently be subjected to critical inspection by competent supervisors.

Are sufficient efforts made to ensure the necessary training of present and future employees of the Industry to attain this objective?

Sales.

It has been said that when a gas engineer commences his training he thinks he knows nothing about everything, but that as he progresses he finds that he knows more about less until eventually he discovers that he knows everything about nothing.

On the contrary, when the gas salesman commences his career he thinks he knows everything about nothing, but as he progresses he finds he knows less about more until ultimately he discovers that he knows nothing about everything.

Whatever degree of truth there may be in this statement, it emphasizes the very important fact that salesmanship as applied to domestic and industrial gas appliances is deservedly becoming a very highly specialized job. The sooner the Gas Industry fully appreciates this, and gives whole-hearted support to properly organized sales departments, the sooner will enterprise be rewarded by increased sales of gas.

Sales require the immediate and undivided attention of capable men with a free hand to exercise their ability and initiative, and the Industry should encourage the best brains into this avenue by paying salaries commensurate with the standard of ability required.

The industrial use of gas is a very large potential load which will compensate for the heavy loss which has been, and still is, taking place in other directions, particularly lighting. The industrial load, however, must be sought by educating prospective consumers in the knowledge that gas can efficiently and economically be of service to them. The men required to do this work are those specially trained in the applications and merits of the various industrial appliances.

The electrical industry is literally a "live wire" competitor. A large capital expenditure has recently been incurred on the electric grid scheme, which can only be justified by greatly increased load. If the Gas Industry is not careful, much of the load it should claim by clear merit will be lost to its competitor through lack of enterprise.

The following tabulation shows the number of B.Th.U. obtainable for a penny in coal, coke, gas, electricity, and fuel oil at the various prices shown. This gives a good indication of the respective possibilities of the gas or electricity undertakings obtaining the heating load.

Commodity.	Price.	Calorific Value, B.Th.U.	Number of B.Th.U. per Penny.
Coal . .	£2 per ton	13,500 per lb.	63,000
Coke . .	30s. ,,	12,000 ,,	74,666
Gas . . .	7 d. per therm	100,000 B.Th.U.	14,286
Gas . . .	6 d. ,,	,, ,,	16,667
Gas . . .	5 d. ,,	,, ,,	20,000
Gas . . .	4 d. ,,	,, ,,	25,000
Electricity .	1 d. per unit	3,412 ,,	3,412
Electricity .	¾d. ,,	,, ,,	4,549
Electricity .	½d. ,,	,, ,,	6,824
Electricity .	¼d. ,,	,, ,,	13,648
Fuel oil .	5 d. per gallon	169,557 ,, gross	33,911
Fuel oil .	4 d. ,,	,, ,, ,,	42,389
Fuel oil .	3 d. ,,	,, ,, ,,	56,519

Financial Administration.

An engineering training cannot qualify anyone to be an authority on financial matters. But, as previously stated, the education and experience of gas engineers should be such as to enable them to form an accurate opinion of the effect of financial policies on gas sales.

The electrical industry is making every possible effort to reduce the price of electricity, and the Gas Industry must do likewise with gas if it is successfully to meet the competition from this source.

Never before, therefore, in the history of the Gas Industry has there existed the same necessity for close collaboration of all departments, and for financial policies being considered by all concerned before being applied.

In the turmoil of daily routine we are apt to overlook the main objective of our Industry, which is to produce and sell gas at a price which, viewed together with its convenience and cleanliness, will induce an ever-increasing consumption. This increased consumption should be obtained for heating, and gradually displace the wasteful and troublesome use of raw coal. The price of gas which would merit this is considered to be from 4d. to 5d. per therm.

Someone has said "Nothing will convince me otherwise than that all men are lovers of Truth." The same could probably be said of "Equity." Opinions, however, of what is the Truth, or what is Equitable, vary so tremendously that the unanimous agreement which might be expected from the quotation does not exist. The Gas Industry has long appreciated that the flat rate is not an equitable method of charging for gas. There are certain capital and revenue expenditures incurred in the supply of gas to a consumer which remain constant irrespective of the quantity of gas used by the consumer. The charge which should be made to the consumer to cover this expenditure should be a constant charge, and independent of the charge for gas. This charge is referred to as a service charge. The separate charge for gas is then referred to as a commodity charge.

As a junior engineer, I have always been impressed with the advantages to be obtained by conformity to standard methods, and have thought how desirable it is that an

encouragement be given in this direction by the organized leading bodies of the Industry. In the matter of gas charges, a definite lead has been given. There is a comprehensive report prepared by the Committee of Gas Charges which was appointed by the National Gas Council in July, 1925. The report was issued in 1926, and sets forth all the considerations which must be taken into account in endeavouring to arrive at an equitable basis of charging for gas. The report was evidently prepared with the hope that undertakings would be encouraged to adopt the more equitable methods suggested.

So few undertakings have taken action in the matter that the leading bodies of the Gas Industry are now stressing the urgency of adopting tariffs as a means of improving gas sales. These bodies believe that the financial risk involved by adherence to existing flat rates is greater than that involved by the immediate introduction of attractive tariffs.

The maximum quantity of gas sold in any one year by the Widnes undertaking was 532 million cu.ft. in the year ended March, 1918. About 66 million cu.ft. of this quantity was taken by one consumer for the purpose of driving gas engines to generate electric current. With the advent of cheaper electricity from the public supply undertaking, generation of electricity by means of gas engines became uneconomical, and the load of 66 million cu.ft., or 12½% of our total load, was immediately lost. Other smaller loads of a similar kind were also lost for the same reason.

There are charges of considerable magnitude in the Revenue Account which remain constant irrespective of the quantity of gas sold. The cost of such charges per 1,000 cu.ft. or per therm may only be reduced by an increase in the sale of gas. The selling price of gas may then be reduced by the reduction so obtained.

The question arises, Which is the wiser policy? To await the increase in load before reducing the price, or to reduce the price with a view to obtaining an increase in load? The latter is the policy adopted by our competitors.

The following statement shows the number of ordinary domestic and prepayment consumers, their total consumptions, and consumption per consumer for the years 1920, 1925, 1930, and 1935. It will be noted that from 1920 to 1935 the consumption per ordinary domestic consumer fell from 39,207 to 29,488 cu.ft., or by 9,719 cu.ft. I think that this loss can be largely attributed to the displacement of gas by electricity for lighting purposes, and to a less degree by the use of more economical gas appliances, such as cookers.

The consumption per prepayment consumer has not been reduced by nearly the same amount, because many have retained gas lighting. Some of the decrease per consumer here is probably due to slum clearance, there now being a larger number of slot houses, but a less number of people per house.

Year.	Number of Consumers.		Annual Consumptions.		Consumption per Consumer.	
	Ordinary Domestic.	Prepayment.	Ordinary Domestic.	Prepayment	Ordinary Domestic.	Prepayment.
			Cu.Ft.	Cu.Ft.	Cu.Ft.	Cu.Ft.
1920	2,573	5,430	100,879,400	137,325,800	39 207	25,290
1925	2,744	5,738	106,057,300	164,996,300	38,651	28,755
1930	3,060	7,100	102,843,200	197,481,900	33,609	27,814
1935	2,724	8,476	80,324,900	188,195,500	29,488	22,203

I conclude this Address by emphasizing the main points upon which I have endeavoured to focus attention:

A satisfactory increase in the rate of sales of gas depends upon the price of gas being reduced, and more efficient service being given.

The activities of all departments concerned with the production and sale of gas should, therefore, be intensified towards this objective.

Attractive tariffs promise to be the most effective means of attaining the desired end.

I take this opportunity of thanking, most sincerely, the Chairman and Members of the Gas and Water Committee of the Widnes Corporation, also Mr. C. E. Dickinson, my Chief, for so kindly supporting my Presidency, and for so freely granting the facilities for your visit.

Vote of Thanks.

Mr. ALBINSON, in proposing the vote of thanks to Mr. Caldwell, stated that there was plenty of controversial matter in the Address and he appreciated the offer of the President to discuss it on some future occasion. In the main conclusions they must all be in agreement. The Gas Industry required consolidation of its load. What was wanted was to make people "smokeless-city-minded." It was the bounden duty of the Gas Industry to bring the price of gas down to the lowest possible figure. On the other hand, the handing of profits over to the rates should be stopped and shareholders should be satisfied with a reasonable profit for gas stock—which was a gilt edged security.

Mr. BURNET (Blackpool) seconded the vote of thanks.

The Chairman of the Gas and Water Committee supported the vote of thanks and stated that he would like to add a mead of praise for such a capable Address. In Widnes everything was done to encourage employees to become salesmen. If a man went into a house to renew a washer on a tap and there was no gas boiler he immediately asked if one could be sent up for trial purposes. A small commission was paid to the workmen if sales were effected.

Richmonds' New Gas Fire Booklet

Variety of Designs

The new High "Beam" gas fire booklet, recently issued by Richmonds Gas Stove Company, Ltd. (Radiation Ltd.), for the winter season, again reveals a delightful variety of designs providing a choice suitable for every type of room and every modern scheme of decoration.

Prominent among the designs shown are the "Flambeau," "Cloister," "Reflector," and "Castile" series, the latter being listed in a new and additional size and also developed into two new series known as the "Castile-Archer" and the "Castile-Yeoman." These new High "Beam" fires are specially designed and proportioned to fit into the modern tiled surrounds which have become so exceedingly popular. The overall dimensions of these two fires (which are made in seven and nine radiant sizes) conform exactly to the size and shape of the round or square fire opening, completing a thoroughly sound and artistic gas fire installation. The "Castile-Archer" is the round-topped fire and the "Castile-Yeoman" the square-topped fire.

The "Rugby" is a newcomer to the family of Richmonds High "Beam" fires. Of plain and modern design this round-topped fire at once appeals, and the Company state that it is destined to become extremely popular.

All the High "Beam" fires shown are equipped with the "Radiation" features, including the patent self-lighting tap and full fire front. The "Georgian," "Keble," and the "Westminster" are also included among the designs shown in this new book and the illustrations are in one or other of Richmonds' Lustre Finishes, which are greatly to be admired for the depth and richness of colour.

Glasgow's Coal Bill Increases

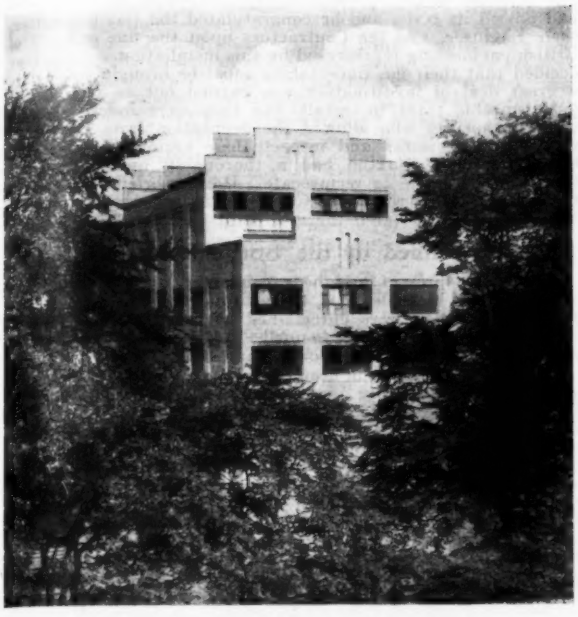
Scottish Owners' Demands

The increased prices demanded by the Scottish coal-owners under the new selling agency scheme will cost the Glasgow Corporation a minimum of £113,187 extra in a full year.

Mr. P. J. Dollan, City Treasurer, stated that the increased cost to the Gas, Electricity, Transport, and Health Departments for the year just concluded was £37,580. He estimated the increase for the current twelve months at £113,187, making a total cost of £150,767 for the period. This was equal to 4d. on the rates and did not take into account the increases paid by other departments which bought smaller quantities. The Gas Department was paying £90,000 more for supplies, the Electricity Department £35,863, the Transport Department £15,469, and Public Health Department £9,435.

New Glover-West Installation Inaugurated at Buxton

A number of Gas Engineers from the Midlands were the guests of the Buxton Corporation Gas Department at the inauguration on Oct. 14 of a new installation of Glover-West vertical retorts and ancillary plant.



An attractive view of the new Retort House.

The introduction of a gas supply to Buxton took place in the year 1851, when the Buxton Gas Light and Coke Company, established the previous year, first commenced to supply gas from their works in Bridge Street. The Company had an unbroken record of successful progress. In 1870 the undertaking was purchased by the Local Board, under the powers conferred by the Buxton Gas Act, and further powers to construct new works in Ashwood Dale were granted by the Buxton Local Board Act, 1873. The new works were completed in 1879, and in 1880 the make of gas was 26,747,600 cu.ft.

The New Carbonizing Plant.

A contract for the construction of the new carbonizing plant on the Glover-West system was placed with Messrs. West's Gas Improvement Company in March, 1935.

The installation comprises eight Glover-West vertical retorts, of the 50/56 in. "steaming" model, arranged in four distinct settings, each of two retorts. The nominal capacity of the installation is 700,000 cu.ft. per diem of gas, with a calorific value of 480 B.Th.U. per cu.ft. It is arranged so that a further extension of four retorts can be readily added at a future date.

The retorts are heated by fuel gas generated in any two of three producers of the step-grate type equipped with a recently introduced pressure apparatus, with the assistance of which the breeze and smaller grades of coke (which are of considerably less market value than the larger grades) can be used for the purpose of heating the retorts.

Coal is brought to the installation in railway wagons, which are discharged into the coal store, from which it is automatically fed to a coal breaker and thence to an elevator which, in turn, delivers it to a belt conveyor for distribution to the overhead storage bunkers of the retort bench.

Coke discharged from the retorts is received in skips, which are transported by way of a steam-driven lift either to the coke grading plant or to a hopper for the supply of retorts after scurfing. The producers are fed from the main hoppers. The coke cutting, grading, and storage plant comprises a battery of hoppers with a capacity of 100 tons, divided into four compartments. one for breeze and one for each of the grades, small, medium, and large, in which the coke is supplied to the consumer. From the hoppers the several grades of coke are fed over de-dusting screens to a bag-filling and weighing machine which can be traversed to any of the outlets as desired.

Access is provided to all portions of the plant for ease of operation and observation by means of wide staircases and platforms, all being well guarded by handrailing. The staircases are arranged at an easy angle, and fitted with renewable hardwood treads. All gearing is effectively enclosed to obviate danger to workmen and operators.

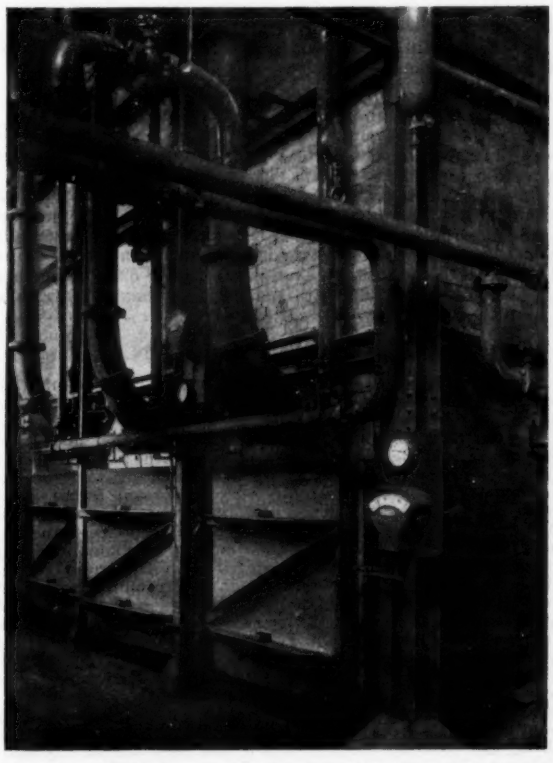
Heat Economy.

The installation is equipped with a Spencer-Bonecourt waste-heat boiler of the tubular induced-draught type.

The steam generated by the waste-heat boiler is used for air injection on the breeze-burning producers in addition to supplying the necessary power for the coke extracting gear, coke screening plant, lift, circulating pumps, exhausters, scrubber engine, tar and liquor pumps, railway wagon haulage gear, and oxide elevator engine.

A steam meter of Kent's shunt type is fitted to the supply pipe to the retort bench, while the distribution of steam to the individual retorts is controlled and measured by West-Taylor steaming valves. A Kent's "Uniform" water meter is fitted to the main supply to the boiler, so that not only is the total amount of steam raised recorded, but, by difference, the quantity of steam available for other purposes over and above that required in the gas-making process.

The pressure of gas on the inlet and outlet of the retort house governor is measured and recorded by dead-beat and register instruments, and the pressure equipment of the producers is similarly provided with instruments for ob-



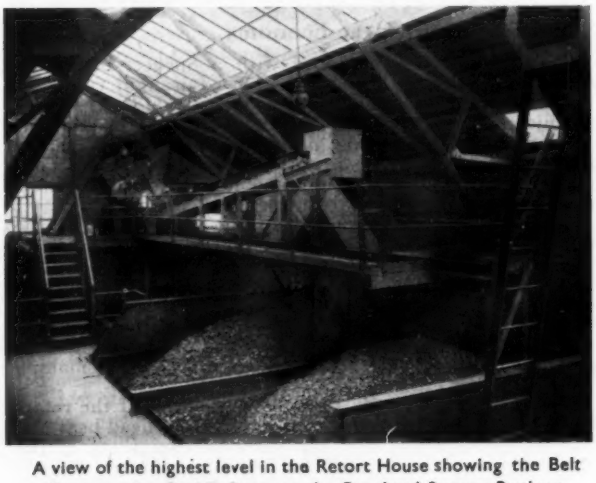
Three Fuel Gas Producers with Steam and Air Injector Equipment to permit the Burning of Coke Breeze.

serving the pressure and temperature of air below the grate and the pressure of the gas in the fuel-gas uptakes leading to the retort settings.

The new installation is housed in an existing retort house extended in the upward direction, considerable care being taken to make the complete building harmonious with its surroundings. The building is of the steel-framed design, panelled and covered with blocks of artificial stone of the same colour and texture as the natural stone of the district, the whole set in Portland cement mortar; the building is also amply lighted by a large area of glazing in metal frames. Platforms are provided at each line of windows for cleaning purposes, the windows being so designed as to enable the outside to be cleaned from the inside platform. The roof is covered by Vellenheli slates secured by composition nails to steel purlins with timber filling.

Bath and Mess Rooms.

Within the retort house building bath and mess rooms are provided for the comfort of the workmen. The former is equipped with wash basin and shower bath with cold and steam-heated hot water supply; the latter with ten enamelled steel clothes cabinets, together with chairs and tables of the new hygienic steel tubular construction. A gas cooker is also provided for cooking purposes.



A view of the highest level in the Retort House showing the Belt Conveyor for Coal Delivery to the Overhead Storage Bunkers.

Provision is made for heating the bath and mess rooms by exhaust steam.

Results.

The new installation was brought into commission on Dec. 18, 1935, the old plant being closed down and normal operation of the new retorts established on Feb. 1, 1936.

During a preliminary test between Feb. 1 and March 31 with the plant under practically full load and with no stocks of coke in the yard, all coke being sold as made, over 10 cwt. were sold per ton of coal carbonized. Since March 31, the plant has been working on a production of approximately 400,000 cu.ft. per day, with six retorts under fire and an average of 4·6 retorts at work.

THE INAUGURATION.

Prior to the inspection of the new plant, the Chairman of the Buxton Corporation Gas Committee (Mr. A. J. Potter) addressed a few words to those assembled in the retort house before calling upon the Mayor to declare the installation officially open. He extended a hearty welcome to their visitors who were actively interested in gas engineering and the production and distribution of this very important factor in the lives of the community. They at Buxton were pleased to think that they might find something of technical interest and perhaps some new features in this modern carbonizing plant. Those of them who were acquainted with the rapid changes which had succeeded one another in gas production methods would appreciate the relief with which they had welcomed the opportunity of being able to work with up-to-date apparatus. The horizontal retort plant at Buxton had been in continual operation, he observed, ever since 1873, and the good results which had been obtained during those sixty years reflected the greatest credit on their Engineer, Mr. Shaw. The price at which they sold gas in Buxton was among the cheapest in the country. Tests had been carried out on this new installation during the past few months, and it had been proved capable of giving results better than those guaranteed by the contractors, with a considerable reduction in operating costs. This new plant was the fulfilment of an ambition that Mr. Shaw had cherished for many years.

His Worship the Mayor of Buxton (Councillor E. White, J.P.) added his personal welcome in saying how pleased they were to have so many visitors with them on that occasion. He also referred to the excellent manner in which the new plant had passed its tests, and he congratulated the Gas Committee, their Engineer, and the Contractors upon the fine example of British engineering represented by this installation. When they decided that their gas undertaking must be brought up-to-date a great deal of investigation was carried out as regards the most suitable plant to install, and they were indebted to all those authorities who allowed the deputation from Buxton to visit their gas-works and inspect their various systems. He hoped that now Buxton had a thoroughly up-to-date plant they would be able to reciprocate. Having briefly referred to the sound lines on which the Gas Industry was progressing, the Mayor formally declared the new plant open.

Entertained by the Borough Council.

After those present had been conducted over the plant by Mr. Shaw and his colleagues, the visitors repaired to the Palace Hotel where they were entertained at high tea by the kind invitation of the Borough Council—the Mayor presiding, supported by members of the Council and other officials.

The Loyal Toast having been duly honoured, that of "Buxton and its Gas Undertaking" was proposed by Sir Frederick West, C.B.E., who, speaking with 29 years' experience of municipal government in the City of Manchester, remarked that he was conscious of the fact that the inhabitants of towns did not always fully appreciate at its full value the work of their representatives on the Council. They were not sufficiently appreciative of the time, energy, and enthusiasm which members of Councils brought to their work. Generally speaking, Councillors were conscious of more criticism than praise. From that point of view, said Sir Frederick, there was room for great improvement in the outlook upon municipal life. He would like to feel that the citizens of any town took a greater interest in municipal activities than was reflected in the small number of votes recorded at elections. It would be a great encouragement to those who represented the ratepayers if they were conscious of the fact that they had the support, or opposition, of the majority rather than a minority of voters. It should be appreciated that this country's form of municipal government was the best in the world.

Referring to the Gas Industry, Sir Frederick observed that modesty made it impossible for him to enter into any eulogies in regard to the plant which had been inaugurated that day. But as Chairman of the firm responsible for the installation he felt that the confidence they had placed in it and all their expectations would be more than realized. He would therefore content himself in regard to this aspect of the Toast by bringing before them a few particulars in connection with the present position of the Gas Industry and the important part it played in the activities of the nation.

The conception of the average man-in-the-street in regard to the Gas Industry was neither as flattering or as definite as they would like it to be. Many regarded it as a decaying industry which was going backwards rather than forwards. All he could say of those who held such opinions was that they were suffering from absolute ignorance. Anyone who was present at Bath at the recent twenty-fifth anniversary Conference of the British Commercial Gas Association must have been well satisfied with the progress the Industry had made and was continuing to make. That progress was indicated by the fact that during the twenty-five years' existence of that Association the gas undertakings of this country had increased their output by no less than 70%—which was no mean achievement in an Industry more than a hundred years old. The progress of the Gas Industry was indicated again by the fact that there were eleven million consumers of gas in this country, and between them they used something like eight million cookers. Moreover, it must be recognized that to produce the coal which the Gas Industry carbonized employed about 70,000 miners throughout the year. In capital the Industry represented some £200,000,000, while it employed 120,000 workpeople.

Sir Frederick West went on to give some examples indicative of the progress of the Industry in other parts of the world—in the U.S.A. where electricity was generated by means of cheap water power; in Tokio where the consumption of gas per head was in excess of towns such as Glasgow and Birmingham; and in Vancouver where, at the time of his visit there in 1921, the gas output had doubled itself in ten years.

A Memento of the Occasion.

On behalf of all those present on that occasion, Sir Frederick observed how they rejoiced in the presence of members of the Buxton Gas Committee and of the Town Council who had taken part in the inauguration of the extensions they had seen that afternoon. In order to commemorate the occasion, which was a red-letter day in the history of the Gas Department and for Mr. Shaw, their capable Engineer, he asked the Mayor and the Chairman of the Gas Committee to accept a small memento which he hoped would always remind them of gas. It took the form of a silver statuette of a knight in armour mounting a flight of stairs which represented the progress of the Gas Industry over a period of years. He wished them joy and prosperity with every success to the Gas Undertaking and to Mr. Shaw in their future operations.

In responding, the Mayor referred to the eighty-five years'

service which gas had rendered to the community at Buxton and said that it was always a matter of satisfaction to the Council when a scheme of improvement such as that inaugurated that day bore fruit. The Chairman of the Gas Committee also acknowledged the Toast and gift which accompanied it, and went on to propose the health of "The Guests." This change over in production methods was one of which he felt very proud, particularly as it had come about during the time he was privileged to be Chairman of the Gas Committee. He thanked his fellow members of that Committee and particularly Mr. Shaw for their support and help in carrying the scheme through towards what he was sure would lead to increased prosperity for their Gas Undertaking. They had inaugurated that day plant which reflected the greatest credit on the Contracting firm and on Mr. Shaw, many of whose own ideas had been incorporated in the extensions. They congratulated the firm on a thoroughly good job. He coupled the Toast with the names of Alderman Abrahams, Vice-Chairman of the Macclesfield Gas Committee, and Mr. G. Dixon, Engineer and Manager of the Nottingham Gas Department.

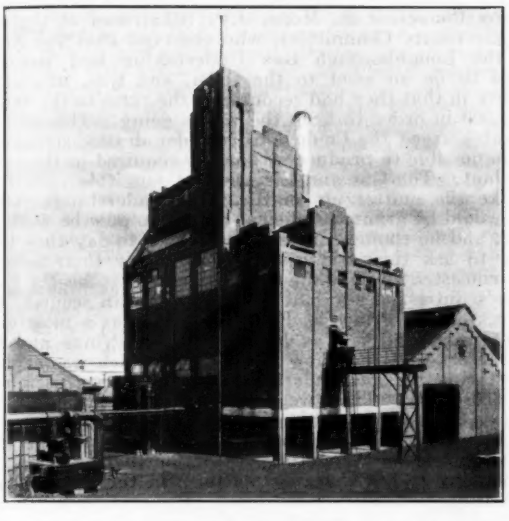
These two gentlemen briefly responded to the Toast, the latter referring to the way in which the new plant would contribute towards the solution of the smoke abatement problem in that wonderful town of Buxton. He also referred to the evidence of Mr. Shaw's thought for his men in the admirable washing rooms, mess rooms, &c. He wished the Undertaking every success.

After a hearty vote of thanks had been accorded to the Mayor on the proposition of Councillor J. H. Smythe, and duly acknowledged, Mr. F. G. SHAW addressed a few words to those present, stressing particularly the manner in which he had been backed up by his Committee and Council in connection with these extensions. They had allowed him to have everything he considered necessary, and he was very grateful to them. When an Engineer brought a scheme forward it was very gratifying for it to receive the entire approval of his Committee. In conclusion, Mr. Shaw paid tribute to the work of the Contractors and their excellent technical direction, as well as to every member of his own staff who had been concerned in the change-over.

Woodall-Duckham Verticals

Replace Obsolete Plant at Loughborough

The Lord Lieutenant of Leicestershire, Sir Arthur Hazlerigg, inaugurated last Friday a new installation of Woodall-Duckham vertical retorts and ancillary plant at the reconstructed works of the Loughborough Corporation Gas Department.



Showing the neat appearance of the Retort House.

In May, 1934, after careful investigation a report was issued to the Loughborough Council stating the arguments for reconstructing the works upon the existing site and dividing the proposed scheme into two programmes, the first providing for the minimum that should be carried out immediately in order to put the works into a satisfactory condition without unduly increasing the outstanding debt on the Undertaking.

This report was subsequently unanimously adopted and tenders invited for the necessary plant covered by the requirements of the first programme. The sanction of the Ministry of Health to the borrowing of the sum of £25,000 having been obtained, contracts for the necessary plant were placed as follows:

1. The Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd.—
   An installation of continuous vertical retorts (capacity 830,000 cu.ft. per day), complete with coal handling, coke grading, and waste heat boiler plant.
2. R. & J. Dempster, Ltd.—
   Water-cooled condensers (capacity 1,000,000 cu.ft. per day).
3. W. C. Holmes & Co., Ltd.—
   Washer scrubber (capacity 1,000,000 cu.ft. per day).
4. Geo. Waller & Son, Ltd.—
   One exhauster set (capacity 40,000 cu.ft. per hour) and reconstruction of existing exhauster set (capacity 70,000 cu.ft. per hour).
5. S. Parsons & Co., Ltd.—
   Weighbridge (capacity 20 tons).
6. Reconstruction of exhauster house, foundations, and roadway construction.

The scheme of reconstruction under the first programme was commenced in May, 1935, and completed last month, the new carbonizing and ancillary plant being actually brought into operation at the end of February, 1936.

The present annual make of gas amounts to 145,610,000 cu.ft., while consumers number 4,734 prepayment and 2,513 ordinary.

The New Installation.

The new installation consists of one bench containing ten latest type upwardly heated Woodall-Duckham continuous vertical retorts and is capable of carbonizing 42 tons of coal and of producing 830,000 cu.ft. of 450 B.Th.U. gas a day. The gas used for heating the retorts is made in two producers situated at ground floor level at one side of the bench. The installation is provided with complete coal and coke handling and coke screening and storage plant and with a waste-heat boiler and is erected in a new steel-framed brick-panelled retort house of striking modern design, which is large enough to house an additional two retorts.

The retorts are of the smallest type developed by the Woodall-Duckham Company. To obtain maximum flexibility and efficiency of operation, it is desirable that the carbonizing plant should be divisible into a reasonable number of separately controllable units. Although the new plant has a gas output of only 830,000 cu.ft. a day, there are ten independent retorts, so arranged that any one retort can be heated up, cooled down, or scurfed without affecting the others. In this way variations in the demand for gas can be closely met.

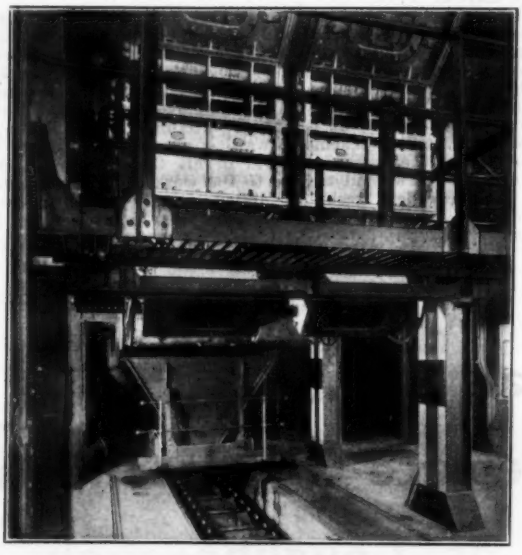
The retorts are about 25 ft. high, rectangular in plan and tapered to allow continuous regular descent of the coal. They are 44 in. long and 10 in. wide at the top.

Coal Supply.

Coal not exceeding 3½ in. cube is discharged from road vehicles into a steel receiving hopper of 10 tons capacity arranged below yard level. This hopper is provided with a steel grid to prevent oversize material entering the hopper.

From this hopper the coal is fed by a plate feeder into

the boot of a 30 tons per hour enclosed bucket elevator, which delivers it through an automatic, weight-totalizing coal weigher, into the bottom strand of an overlapping bucket conveyor encircling the bench. This conveyor delivers the coal, by means of a series of fixed dumpers,



Ground level, showing Coke Bogey above Bucket Conveyor.

into a steel overhead coal storage hopper arranged above and along the retort bench. The elevator and conveyor are capable of handling 30 tons of coal per hour, and the storage hopper can accommodate 84 tons of coal or 48 hours' supply to the retorts. Provision is made for by-passing the coal weigher, when required, and also for the future addition of a coal breaker, should this be desired.

The overhead storage hopper is provided with a chute for delivering coal into the coal store which has been formed in the old horizontal retort house alongside the new installation.

Producers.

To supply the gas for heating the retorts two producers are provided at the retort house floor level at one side of the bench. The producers are arranged so that one producer may be shut down without interfering in any way with the working of the other producer. The gas from either of the producers may be taken to any of the retorts.

The producers are of the step-grate type and each is constructed with ample grate area for the efficient heating of six retorts when using a mixture of coke and breeze, as well as for burning the additional amount of fuel required for a supplementary supply of producer gas to the waste heat boiler.

The flow of waste gases from the combustion chambers of each retort is controlled by two dampers, one for each side of the retort. The waste gases from each pair of retorts pass into a common flue and out through a neck into the waste gas main.

The waste gas main conveys the gases either to the chimney or to a waste-heat boiler which is of the " W.-D." horizontal firetube, induced draught type, is designed for a working pressure of 120 lb. per sq.in. It is of a size to deal with the waste gases from a finally completed bench of twelve retorts.

In order that the boiler may give its maximum output, pending the addition of the further two retorts, or if at any time other retorts are not in operation, provision is made so that a supplementary supply of producer gas can be mixed with the waste gases before they are passed to the boiler, a supplementary combustion flue being provided.

Coke Handling, Storage, and Screening Plant.

The contents of the coke chambers beneath the retorts are discharged into the bottom strand of the over-lapping bucket conveyor through a travelling filling chute running on rails laid in the retort house floor.

When dealing with the coke required for the producers and for filling the retorts at starting up or after scurfing periods, the overlapping bucket conveyor delivers the coke by means of a fixed dumper into an overhead producer and retort coke storage hopper arranged at one end of and forming an extension of the overhead coal storage hoppers.

The surplus coke is delivered to the coke screening plant, from the bottom strand of an external loop of the overlapping bucket conveyor, by means of a fixed dumper. It is fed through a chute fitted with a static screen into a coke cutting and splitting machine. The fine coke passes through the screen into a chute which by-passes the cutter and connects into the cutter delivery chute.

The cut coke, together with the fine coke by-passing the cutter, is passed over a W-D " Undulo " coke screen, which conveys the coke over the storage bunkers as it screens it, so that there is no necessity for chutes to direct it into the appropriate bays.

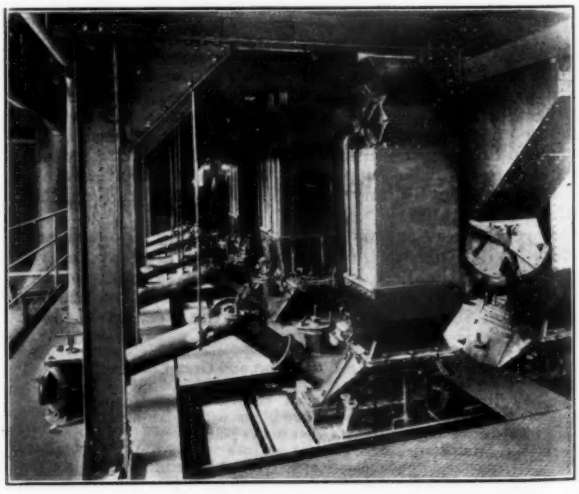
The " Undulo " screen separates the coke into four sizes, which fall into their respective compartments in a range of storage bunkers, having a total storage capacity of 100 tons.

THE INAUGURATION.

A large number of visitors, including Gas Engineers from neighbouring undertakings, members of the Borough Council, and prominent local representatives, were present at the inauguration of the new plant at the Loughborough Works, which was performed by Sir Arthur Hazlerigg, Bart., J.P., C.C. (Lord Lieutenant of the County of Leicestershire).

A few preliminary remarks were addressed to those present by Councillor A. Moss, J.P. (Chairman of the Gas and Electricity Committee), who observed that two years ago the Loughborough Gas Undertaking had virtually ceased to be an asset to the town, and was, in fact, a liability in that they had recourse to the rates to the extent of £4,000 in order to keep the works going. This raid on the rates urged the Council to consider drastic steps as it was impossible to produce all the gas required in the existing plant. The Gas and Electricity Committee undertook to take the matter up on the strict understanding that they would be granted sufficient money to put the works in order; and he thought he might say that to-day they were going to ask their visitors to see whether their reforms were consistent with what they considered to be the Committee's duties. They had been fortunate in securing the services of Mr. Prince as Engineer, who was a most competent man, and it was largely to Mr. Prince and the Contractors that they now had a plant which was capable of restoring the gas undertaking to its proper usefulness and prosperity. They were particularly gratified at the interest Sir Arthur Hazlerigg had shown by coming to Loughborough to inaugurate their new plant, while they also welcomed all their other visitors on that occasion.

Mounting to the charging platform in the retort house, Sir Arthur formally set the plant in operation by setting the coal elevator in motion, at the same time saying how pleased he was to be there on that occasion to inaugurate their new plant, which he hoped would be extremely successful and would spread light, heat, and health to the inhabitants of Loughborough.



A view at the Charging Floor Level.

Guests of the Committee.

After an inspection of the gas-works, those present repaired to the Town Hall, where some 150 persons sat down

to luncheon at the kind invitation of the Gas and Electricity Committee—Councillor Moss presiding.

The first Toast—that of "The Loughborough Corporation Gas Undertaking"—was proposed by Sir ARTHUR HAZLERIGG, who, at the outset, took the opportunity of thanking the Chairman and members of the Gas and Electricity Committee who had so kindly asked him to go there and had given him the chance of seeing their extremely interesting gas-works. He had seen Sir Francis Goodenough the previous day at the dinner of the Incorporated Sales Managers' Association, and the latter had asked him to convey his best wishes to all his friends at Loughborough. Referring to the cleanliness of the gas-works, Sir Arthur observed that anyone who could make a gas-works look as nice as those at Loughborough should be given full marks and "10 for neatness." Once one began to see the enormous number of uses to which gas could be put one realized that it was one of the most valuable industries in the whole country; and he congratulated the Loughborough Committee on having taken their courage in both hands (and, he understood, none too soon) and put down this new plant. There were, he went on, three essential aspects of a gas undertaking—first, the proper quality of the gas; secondly, to make it available at a price which could enable all the inhabitants to utilize it; and, thirdly, proper salesmanship. He was sure that the Loughborough Undertaking fulfilled all these requirements, and they now looked forward to the time when it would extend its service to a still larger district. In coupling the Toast with the name of Councillor Moss, Sir Arthur drew attention to the advantages of both gas and electrical undertakings being under one control, by which means he was sure both industries would prosper side by side.

Councillor A. MOSS, in responding to the Toast, observed how heartily glad he was that the old conditions in regard to their gas-works were now non-existent. On the appointment of Mr. Prince their fears had subsided, and, upon better acquaintance, they had been replaced by a quiet confidence that the Undertaking could be restored to its original and proper usefulness. They were now in possession of a plant which could achieve that end; and he would express their thanks to the Contractors for the competent manner in which they had carried out their work—which had been rendered tremendously difficult by reason of the nature of the ground on which they had to erect the new buildings. He congratulated them overcoming these difficulties.

While they were now in possession of an excellent gas producing plant, that possession was not in itself sufficient; it must be in the hands of a competent engineer and efficient staff. These conditions were also fulfilled in their case.

The Toast of "The Contractors" was proposed by Alderman T. W. BAILEY (a member of the Gas and Electricity Committee), who pointed out that at the inception of this reconstruction scheme it was at the back of the minds of the Committee that, so far as possible, Loughborough should benefit from the employment point of view; and he was very glad to be able to report that out of the total sum spent no less than £10,000 had been paid to local firms or absorbed by local labour. The Contractors had most willingly met the wishes of their Engineer and Committee. He coupled with the Toast the name of Mr. F. B. Richards, the Chairman of the Woodall-Duckham Company.

Mr. RICHARDS said how happy and proud he was to be permitted, on behalf of the Contractors, to respond to the Toast. He thanked the Chairman for the very kind remarks he had made in reference to the Contractors, and went on to speak of the partnership which now existed in the Gas Industry between gas undertakings and the manufacturers of plant and appliances. The time was past, he observed, when the Contracting side was regarded by undertakings as rather in the nature of outcasts; to-day they were admitted to full partnership. While it was the function of the gas undertakings to manufacture and sell gas, it was up to the contractors to provide the most efficient plant to produce that gas. Mr. Richards congratulated the Gas Committee on the courage with which, in March last, they instituted a block system of charge whereby their larger consumers would be encouraged to use gas for further processes in which they could not have used gas in ordinary circumstances.

The Toast of "The Visitors" was proposed by HIS WORSHIP THE MAYOR (Councillor F. G. Fleeman, J.P.), and responded to by Mr. GEORGE DIXON (Engineer and Manager of the Nottingham Gas Department) and by Dr. C. M. WALTER (Industrial Research Laboratory, Birmingham Gas Department).

Mr. DIXON observed that they in the Gas Industry would leave Loughborough that day much richer for what they had seen. Mr. Prince and he had been friends in the Industry for a number of years, and this new plant was only what they would have expected of him. He also referred to the way in which the new carbonizing plant would contribute towards the solution of the smoke abatement problem in Loughborough. He wished the Undertaking every success with their new plant. Dr. WALTER referred to the development of the industrial load in the Gas Industry and to the Industrial Development Centres Scheme in which the Loughborough Undertaking participated. At the end of last year a complete survey was made of the industrial consumers in that area with a view to ascertaining how the use of gas could be increased by means of a suitable tariff. As a result a new system of charge was introduced in April, and since then a considerable amount of industrial plant had been installed. The tariff was a direct encouragement to manufacturers in this district to use more gas, and by so doing they would score considerably.

Finally, the Toast of "The Chairman" was proposed by Mr. H. J. DEANE (Coroner for North Leicestershire) and duly acknowledged.

Over 1,000 miles of STANTON-WILSON MAINS

The fact that in barely six years over 1,000 miles of Stanton-Wilson mains have been laid by about 700 public undertakings proves that the Stanton-Wilson Self-adjusting Pipe Joint has effectively solved the problems raised by ground subsidence and traffic vibration.

The most durable, trouble-free gas and water mains are those of Stanton "New" Spun Iron Pipes coupled with Stanton-Wilson Self-adjusting Joints.

The **STANTON-WILSON** self-adjusting **PIPE JOINT**

The Stanton Ironworks Company Limited, Near Nottingham

Eastern Counties Gas Engineers' and Managers' Association

The Autumn Meeting of the Eastern Counties Gas Engineers' and Managers' Association was held at the Station Hotel, Chesterfield, on Thursday, Oct. 15, under the Presidency of Mr. Geo. Wright, of Lincoln.

The minutes of the previous General Meeting of the Association, as published in the Technical Press, having been duly confirmed, the Hon. Secretary and Treasurer (Mr. W. C. Chapman, of Boston) read apologies for absence from various officials of National Bodies and from Presidents of kindred Associations.

New Members.

On the proposition of Mr. J. KENNINGTON (Grimsby), seconded by Mr. C. E. BYRT (Gainsborough), the following were elected to Membership of the Association:

Mr. R. Hutchinson (Assistant Engineer, Worksop).
Mr. G. B. L. Wilson (Engineer and Manager, King's Lynn).
Mr. G. Beeton (Engineer and Manager, Dunmow).
Mr. J. H. Rioch (Engineer and Manager, Cambridge).

And to Associate Membership:

Mr. W. D. Cheshire (Parkinson & Cowan).

The SECRETARY announced that the Higher Grade Certificate in The Institution of Gas Engineers' Examination had been awarded to Mr. H. B. Meggett.

On the proposition of Mr. F. G. BROCKWAY (Cleethorpes), seconded by Mr. C. S. DICKER (March), it was unanimously agreed that the President be elected to serve as the Association's representative on the Council of The Institution of Gas Engineers, and in acknowledgment, Mr. WRIGHT expressed his appreciation of the honour they had thus conferred upon him.

The New President.

The PRESIDENT thereafter moved that Mr. C. R. Fowler, of Leiston, be elected President of the Association for the ensuing year, remarking that he was sure he would fulfil the duties of this office to the entire satisfaction of all concerned. Most of them had known Mr. Fowler for many years, and it was unnecessary for him to mention his good qualities.

The proposition was seconded by Mr. A. L. HIGHAM (King's Lynn) and carried unanimously, and the Secretary read a letter from Mr. Fowler expressing his regret at not being able to be present through indisposition.

The PRESIDENT then referred to the deep sense of appreciation they all felt for the many years' service Mr. W. C. Chapman had rendered to the Association. Only those who had passed through the Presidential chair could have a true conception of the amount of work entailed in the office of Secretary and Treasurer. Mr. Chapman's work was always carried out in such a thorough and efficient manner—nothing was too much trouble for him—that the office of President had become almost a sinecure. He therefore had the greatest pleasure in proposing Mr. Chapman's name for election to the Vice-Presidency of the Association.

Mr. R. G. SHADBOLT (Birmingham), in formally seconding this resolution, said he was sure this was the best decision which had been made in the history of the Association. He would in due course reach the highest honour it was in their power to bestow upon any of their members, and his ability recommended him as the best man for the position. The proposition was carried unanimously.

Mr. CHAPMAN said how much he appreciated the honour they had conferred upon him, and assured the members he would do his very best, as he had done in the capacity of Secretary and Treasurer—to uphold the dignity of President and spare no pains to work for the interests of the Association.

On the proposition of Mr. HIGHAM, seconded by Mr. J. H. TROUGHTON (Newmarket), Mr. C. E. Wright (Ipswich) and Mr. F. H. Robinson (Bishop's Stortford) were elected to serve on the Committee.

The Association's Auditors, Mr. W. S. Venner (Brentwood) and Mr. G. A. Mallett (Ipswich) were unanimously re-appointed, the PRESIDENT paying tribute to the services they had rendered in this capacity in the past.

It was proposed by Mr. F. A. WEST (Newark) and seconded by Mr. BROCKWAY that Mr. Chapman be re-elected for a further twelve months as Secretary and Treasurer, which was carried unanimously, Mr. Chapman briefly acknowledging.

The PRESIDENT proposed that Mr. E. F. Keable (Gorleston) be re-elected Education Secretary, and thanked him at the same time for all he had done in this connection in the past. They would have the greatest difficulty, he said, in finding anyone else to do this work so successfully.

This resolution was seconded by Mr. F. YOUNG (Skegness) and unanimously agreed to.

In regard to the President's Benevolent Fund, Mr. WRIGHT announced that a sum of £5 5s. had been received from the Eastern Commercial Section.

A further letter was read from Mr. Fowler in which he extended a hearty invitation from his Chairman and Directors for the Association to hold their next meeting at Leiston, when, he stated, every effort would be made to make the visit as interesting as possible. The invitation was gratefully accepted on the proposition of Mr. TROUGHTON.

Change of Name.

On the proposition of Mr. KENNINGTON, seconded by Mr. BYRT, it was unanimously agreed to alter Rule 1 so that the title of the Association should now be "The Eastern Counties Gas Engineers' and Managers' Association."

The PRESIDENT then drew members' attention to the Shewring Fund which had been instituted to provide for the family of the late Mr. Shewring, whose tragic death some months ago had left them almost destitute. The Cambridge University and Town Gas Light Company, he said, had most generously made a grant of £500 to his dependants and had undertaken to provide for the education of his two sons. Though cases of this nature did not often occur, said Mr. Wright, when they did the Gas Industry was always ready to subscribe, and he therefore proposed that the Association donate the sum of £7 7s. to the Fund.

This proposition was seconded by Mr. SHADBOLT and unanimously agreed to.

This concluded the business of the meeting, and thereafter the members proceeded to the works of the Staveley Coal and Iron Company, Ltd., at whose invitation they were enabled to inspect in the morning their sand-spun pipe plant.

The plant is designed for the production of 80,000 tons per annum of sand-spun iron pipes, varying in size from 4 in. to 12 in., with a laying length in all cases of 16 ft. The pipes, as normally produced, have an integral spigot bead, but beadless pipes, and turned and bored pipes of the same length and diameters, can be made as required.

The first operations seen were those carried out at the jolting stations where the sand moulds are made in the flasks. There are four of these stations, and the chief item of plant in each consists of a jolter capable of handling loads up to 12 tons. The moving tables of these machines carry the socket-patterns; these latter also centre the flasks and the bottom end of the body pattern in relation to each other, in addition to their primary duties. The sand supply comes from rotary bottomed storage bunkers situated above the jolters, *via* flexible jointed pipes, which deliver direct to the hoppers previously placed in position on each flask.

All moulds are skin-dried immediately before their transfer to the spinners. This operation is carried out by means of high velocity gas jets, which inject a large quantity of heated air into the moulds. The gas used is coke oven gas supplied by the Devonshire Works of the Company.

Spinners.

There are seven spinners whose function is to rotate the flasks, containing their sand lining, at such a speed (about 1,100 r.p.m.) as to subject the metal to a centrifugal force of at least 75 times that of gravity. Each machine consists of a box framework containing four rollers, two of which are driven, and two idle. The flask is transferred,

by means of hydraulically operated manipulators, from the receiving gantry alongside to these rollers, and a safety hood automatically closes the machine, which is then run up to speed.

Molten metal is brought from cupolas in a 3-ton ladle suspended from an overhead travelling crane, and a predetermined quantity is poured from this into a small tilting ladle, supported on a travelling carriage.

All the movements in connection with each spinner are controlled by one operator, stationed at the socket end of the machine—*i.e.*, that end remote from the pouring. He is assisted in the control by means of two electric signalling lamps, one indicating when the machine is up to speed, and the other when the tilting ladle is in pouring position.

Stripping was the next main operation seen. The object is to remove the pipe from the flask, and the plant provided does this in two operations; the first is the removal of a longitudinal strip of the sand mould. This operation consists in passing two tubes, from the ends of which compressed air is issuing, through the sand in the annular space between the pipe and flask. The operation is carried out in a closed chamber called the " blow box," the dust-laden air being exhausted into the main dust extraction system.

The next operation consists of the removal of the pipe by means of one of two hydraulic rams, which pushes the pipe from the flask to a transfer bogie waiting to receive it. After the removal of the pipe, the carriage upon which the flask is resting is tilted to a position about 70° from the horizontal, thereby enabling the used sand to run out of the flask into a hopper and thence to the sand-handling system. The sand reclamation plant is capable of dealing with 25 tons per hour.

The pipes finally pass to a turning and boring lathe if this operation is required by the customer, but in any case all are weighed, hydraulically tested in accordance with B.E.S.A. requirements, and given a rigid visual examination by the Company's Inspection Department. Thence the pipes pass to one of the dipping units, heated in a coke-fired stove, and finally dipped in a tank of heated dehydrated tar solution, the temperature of both stove and tank being under pyrometric control.

The melting plant consists of three cupolas each capable of melting 15 tons of pig iron per hour.

The firm have recently put down metal spinning plant for the production of pipes of 3 and 4 in. diameter. These pipes pass direct to an annealing furnace which is fired by producer gas from an adjacent plant utilizing small coke. The pipes are carried on an endless chain through the furnace, taking 20 to 25 minutes to pass through the annealing zone, which is maintained at a temperature of 920° C. This furnace will actually restore pipes to their original straightness should they become bent in handling.

Luncheon with the Staveley Company.

Returning to the Station Hotel, Chesterfield, the Association were the guests of the Staveley Company at luncheon, when Mr. H. H. BERRESFORD (Director and Commercial Manager) presided, supported by Mr. J. B. Allan (Foundries General Manager) and Mr. J. Bryant (Foundries Sales Manager).

The Loyal Toast having been honoured, Mr. BERRESFORD said how gratified the Company were to be honoured by a visit from their Association, and that they had selected Staveley as being worthy of a visit. They were delighted to welcome them there. The Staveley Company had much in common with the Gas Industry. They had spent many years on research before finally deciding what was in their opinion the high-water mark in the manufacture of this class of product.

Mr. WRIGHT expressed the Association's sincere appreciation of the Staveley Company's kind hospitality. Theirs was one of the oldest established concerns of its kind in the country, and from what they had already been privileged to see they had formed their conclusions that it was one of the most modern as well. He thought they would leave Chesterfield with the sense of having inspected one of the most up-to-date works concerned with pipe production, and he did not think they could better show their appreciation than by the considerable distances many of them had come in order to take part in that visit. He tendered to the Staveley Company the Association's grateful thanks to the Directors and guides and all those who had been concerned in making their visit so interesting.

The Devonshire Works.

The Devonshire Works cover an area of approximately 172 acres, and the first blast furnace started up on this site was lit in July, 1907. The present blast furnace plant consists of four modern bell-topped furnaces with 16 Cowper stoves for pre-heating the air (blast) for smelting the ores, also blast temperature equalizer and dust catcher in connection with each furnace. The output of each furnace per week is in the region of 1,100 tons, and to produce the total output of 4,400 tons of iron it is necessary to handle some 22,000 tons of raw material. There is an up-to-date gas cleaning plant in connection with the blast furnaces, which consists of three vertical scrubbers and three Thiessen washers in parallel, each of the latter being capable of passing 2,118,000 cu.ft. per hour.

The coke oven plant consists of 170 ovens, of which 100 are of the waste-heat type and 70 of the regenerative type. These ovens have a throughput of approximately 9,000 tons of slack per week.

Various of the Staveley Company's by-product and chemical plant were also inspected, including the benzole and sulphate plants. Among the many ramifications of the firm is the production of tarmacadam, soda and bleach, hydrochloric acid, liquid chlorine, nitro benzole, sulphuric acid, and other tar products.

After the inspection of the Devonshire Works, many of the members returned again to Chesterfield, where tea was provided at the kind invitation of the Staveley Company.

Gas Undertakings' Results

Ellesmere Port.

At a meeting of the Ellesmere Port Urban Council last week it was reported that there was a deficit on the Gas Undertaking for the year ended March 31 last. Mr. J. W. Nicholas, Chairman of the Gas Committee, said there had been 332 new consumers, but the consumption of gas had decreased.

Kendal.

The Engineer and Manager of the Kendal Gas Department, Mr. T. Crowdy, in his report for the year ended March 31, 1936, stated that the gross profit amounted to £8,235, from which had to be deducted £6,454 for interest and sinking fund, and income-tax and bank charges. The net profit on the year's working was £1,781. At present there are 2,097 ordinary and 3,784 prepayment consumers, making a total of 5,881, an increase of 124 on the year. The number of cookers in use (4,211) is an increase of 476 on the previous year.

Leamington.

The report of the Directors of the Leamington Priors Gas Company for the half-year ended June 30, 1936, states that the gas sold for the half-year is nearly 12 million cu.ft. more than in the first half of 1935, an increase of 5·8%, and there is an increase in the number of customers. This follows on an increase of 4% in the preceding half-year over the corresponding half-year of 1934. The Board records their sincere appreciation of the faithful service of Mr. W. E. T. Hems, who is retiring next month from the post of Secretary after 61 years' valued service with the Company. The Directors recommend the payment of the statutory dividends on Oct. 1, less income-tax.

South Australian.

The seventy-fifth annual report of the Directors of the South Australian Gas Company on the accounts for the year ended June 30, 1936, states that the profit, after paying interest on bonds and adding balance (£11,139) carried forward from last year, amounted to £102,570. This has been applied in the following manner: Dividend for half-year ended Dec. 31, 1935, at the rate of 5% per annum, £35,000, dividend for half-year ended June 30, 1936, at the rate of 5% per annum, £35,000, transferred to special purposes fund £19,176, £89,176, leaving a balance to be carried forward in profit and loss account of £13,394.

Swadlincote.

The annual report of the Swadlincote Urban Council Gas Department for the past year states that the income from the sales of gas and other items was £16,414 and the total expenditure £17,457, showing a net loss of £1,042, which was made good by a contribution from the rates. The previous year's loss was £1,115. The income from gas supplies yielded an increase of £70 over the previous year, this being the first increase since 1929. Sales of gas for the year totalled 211,816·80 therms (47,070,400 cu.ft.), showing a slight increase on the previous year's sales which amounted to 209,688·75 therms (46,597,500 cu.ft.). Sales represented 82% of the make, as compared with an average of 76·4% in the three previous years, the improvement being traceable to a diminution in the loss through leakage. The cost of supplies was 1s. 2·05d. per therm (5s. 3d. per 1,000 cu.ft.), and the average selling price 1s. 0·37d. per therm (4s. 10d. per 1,000 cu.ft.).

SCOTTISH JUNIOR GAS ASSOCIATION (EASTERN DISTRICT)

JAMES M. DOW.

Mr. James M. Dow, Assistant Gas Engineer to the Kirkcaldy Corporation, received his early training with the Perth Corporation Gas Department. While at Perth he attended Dundee Technical College, and completed there The Institution of Gas Engineers' Approved Course. He was successful in passing with distinctions the Ordinary Grade Examinations in Gas Engineering and Gas Supply and the Higher Grade Examination in Gas Engineering, and was elected an Associate Member of The Institution of Gas Engineers in 1932. Mr. Dow also gained numerous special awards in ancillary subjects, and on completion of his studies was awarded the Armitstead Medal, the highest award of the College. Since going to Kirkcaldy, three years ago, he has held the appointment as Lecturer in Gas Subjects at the Kirkcaldy Technical School.

Presidential Address

OF

JAMES M. DOW

(Assistant Gas Engineer to the Kirkcaldy Corporation)

Presented at the Opening Meeting of the Association held at Edinburgh on Saturday, Oct. 3

Recent Developments at Kirkcaldy.

I wish at the outset to refer to the question of education, and to state some of our experiences in East Fife. Despite the splendid efforts of the members of the Scottish Education Committee to set on foot a scheme of education which would prove acceptable to every student in the Industry north of the Tweed, there still exist many difficulties and shortcomings. Allow me to deal with a few of the difficulties experienced in Kirkcaldy.

In most of the Technical Institutions where Gas Subjects are taught, one generally finds that in some years of the Course an insufficient number of students come forward to warrant the local authorities continuing classes. The result is that lads who are anxious to complete the Course find the main artery blocked, and they are compelled to take side turnings in ancillary subjects or sit on the fence until the way is again clear. Idleness is the nucleus of decay, and decay invariably attacks the spirit of ambition once kindled in those lads. I am of firm belief that no matter where the Technical Institution is situated, the Gas Industry cannot produce students at the numbers required by these Institutions for forming classes in the main subjects. In Kirkcaldy, the minimum number for a first year class is twelve, with the result that there has been no first year class since Session 1933-34. This is most unsatisfactory, and I know that in other centres similar conditions exist. When one looks over the substantial balance-sheet of the Scottish Education Fund, one wonders why numbers influence the cause.

I would suggest, therefore, that the entire cost of tuition in the main subjects should be borne by the Education Fund, and that subjects should be taught every year a single student requires tuition. This is the only way of giving fair play to the student—and, after all, is not the Education Fund for meeting the requirements of the students?

I have always considered it impossible to do justice to the main subjects under the present syllabus where these are only taught in the third and fifth years. Actually in those years tuition in Gas Engineering and Gas Supply has to be completed over a period that amounts to only 25 hours per subject. I do think an effort should be made to include a main subject in each year of the Course, and that students would appreciate more practical tuition in such a subject as practical Gas-Works Chemistry. In Kirkcaldy, main subjects are taught in the first, second, third, fifth, and sixth years of the Course, and to this I attribute the splendid successes which the School has attained in recent years.

The modification in the general educational requirements of students going forward for the Diploma Examinations after Oct. 1, 1936, is, I believe, a very considerate move by the Education Committee. It should encourage many of the older students who have been holding back from the Diploma Examinations owing to the fact that they were being called upon to produce a matriculation or equivalent certificate before their entry could be accepted. The danger exists, however, of reducing the high standard of these examinations as compared with those of other Technical Institutions, and I would prefer to see a student's general education investigated and brought up to the required standard before he is admitted to an Approved Course. As it is, a student cannot take his Diploma Examination until he has attained the age of twenty-five. There is, therefore, plenty of time for him to bring his education up to the required standard.

The value of gaining admittance to the Institution by examination cannot be over estimated, more especially to-day when there is so much grouping of undertakings under regional corporations. The controlling interests of these concerns are calling for men with the highest qualifications, so that none can expect to attain a position of responsibility in the Industry unless he can show in "black and white" that he is a Chartered Gas Engineer.

My advice to ambitious young men in the Association is: See to it that your general education meets with the strictest censorship; complete an Approved Course of education that will qualify you for admittance to The Institution of Gas Engineers; then strike out for as much experience in other works as it is possible to attain. One must never lose sight of the fact that an ounce of practice is worth a pound of theory, but unless one has the theoretical backing behind one's efforts, practical experience leads to little advancement.

Kirkcaldy Gas Undertaking.

In 1911 the Gas Undertaking was taken over by the Corporation from the Kirkcaldy Gas Light Company, Ltd. The make of gas for that year was 155 million cu.ft., and the capital sunk in the Undertaking £144,980, working out at a figure not far short of £1,000 per million cu.ft. This millstone of high capital has been the greatest stumbling block to the Department's progress. Another handicap of almost equal magnitude was the fact that at the time of taking over the works were requiring considerable reconstruction.

In 1922 the present vertical retort house was completed on the existing site. In 1922 the capital debt of the Undertaking amounted to £1,248 per million cu.ft. of gas made, the net price of gas at this period being 7s. 6·46d. per 1,000 cu.ft., and for the financial year ended May 15, 1936, the capital debt has been reduced to £550 per million cu.ft. of gas made, and the net price of gas reduced to 3s. 4·68d. per 1,000 cu.ft.

Distribution and Sales Development.

Bearing in mind that the main objective of a successful gas undertaking is to sell gas as cheaply as possible, and that the only way an undertaking carrying a heavy burden of capital debt can achieve this is by increased sales, the Department has not been slow to offer many attractive propositions to the public.

To-day gas is sold in Kirkcaldy on the following block system of charges:

—	Per 1,000 Cu.Ft.	Per Therm.
	s. d.	d.
Up to 20,000 cu.ft. per consumer per annum	3 6	9·882
Next 30,000 ,, ,, ,, ,, ,,	3 1	8·706
,, 100,000 ,, ,, ,, ,, ,,	2 8	7·529
All in excess of 150,000 cu ft. per consumer	2 3	6·353

Slot consumers pay 3d. per 1,000 cu.ft above these rates.

This scale of charges applies to all classes of consumer, and has been helpful in pushing the industrial load, as it

will be noted that the industrial consumer has only to consume 150,000 cu.ft. before he is down to the minimum rate. Before this scale was introduced, industrial consumers, large or small, received the same percentage rebate irrespective of their consumption, so that this scheme has eliminated the unfairness of the large consumer paying the same rate for gas as the small uneconomic consumer.

This system has another important advantage. The sale of gas in Kirkcaldy last year amounted to 211 million cu.ft. This was distributed throughout the different blocks as follows:

1st block	143,719,000 cu.ft.
2nd ,,	25,320,000 ,,
3rd ,,	7,836,000 ,,
4th ,,	8,802,000 ,,
	185,686,000 ,,
5th block (special contract and street lighting)	25,646,000 ,,
	211,332,000 cu.ft.

Neglecting the 5th block, which is special, and assuming that the gas sold under blocks 1, 2, 3, and 4 had been sold at a flat rate basis, it would have been necessary to have made a net profit of £774 before the price could be reduced 1d. per 1,000 cu.ft. On the other hand, if this sum had been available for reducing the price of gas over the block rates, it would have been possible to introduce the following reductions:

—	Reduction per 1,000 Cu.Ft. Sold.	Share of Surplus Profits.	Proposed New Rates.
	d.	£	s. d.
1st block	*Nil*	*Nil*	3 6 per 1,000 cu.ft.
2nd ,,	3	317	2 10 ,, ,,
3rd ,,	6	196	2 2 ,, ,,
4th ,,	7	257	1 8 ,, ,,

This example will perhaps help to show that it is much better for an undertaking to introduce an attractive tariff and apply its surplus profits in making this tariff attractive for its large consumers, rather than reducing the basic rate by a trifling amount, which invariably leads to little increased business.

Showrooms.

In 1933 the Department enlarged and reorganized its Offices and Showroom with a view to providing consumers with better facilities for inspecting up-to-date apparatus. Throughout the winter months organized parties are encouraged to visit the showroom when cookery demonstrations or lectures are given by members of the staff or local domestic science teachers. It has always been my opinion that it does not require an expert to demonstrate the simplicity of cooking with a modern gas cooker, and that more effective results are obtained if local talent can be introduced to give demonstrations. This year we have opened a branch showroom in the north end of the town with a view to pushing increased sales in a district which hitherto had been too distant from the main showroom to afford consumers in that area an opportunity of inspecting gas apparatus.

Hire-Purchase Schemes.

In Kirkcaldy we have never encouraged any simple hire system, as it is felt that the maintenance of this service must be borne, more or less, from the revenue from sale of gas, and is an obstacle in the way of reducing gas charges. Further, there is a tendency for undertakings operating a simple hire system being tempted to install apparatus which has long outlived its useful life. No matter how carefully it may have been overhauled and painted up, it invariably gives rise to a dissatisfied consumer. It has always been our aim to sell apparatus to the consumer which we know will give entire satisfaction on terms very little in excess of the purchase price.

I am of opinion that if we are to hold our own against electrical competition in the domestic field we must be prepared to extend our hire-purchase payments over long periods. There is little use of selling apparatus at rates which make consumers afraid to use the appliances because of the high extras that will have to be met when paying the gas bill.

Street Lighting.

Now that the Ministry of Transport is calling for better street lighting, this is a field which is bound to call for considerable revision. I have often wondered if the Gas Industry has fully realized the importance of this load and of the great amount of potential business that will accrue in the future. One notes with no small degree of alarm the rapid advances of the electrical industry in this business. Our competitors realize—possibly more so than the Gas Industry—the advantages of having a huge bulk consumer at a time when other industrial loads are closing down. This tells on the efficiency of production, and I am confident that if the Gas Industry fully appreciated this point, greater effort would be made to improve the lighting service we still hold.

In Kirkcaldy we have been endeavouring, as best we can, to keep our end up against very severe competition from the local municipally governed electricity undertaking. Fully appreciating the usefulness of the load already in our hands, we adjusted our tariff as follows:

Up to 10,000,000 cu ft. per annum.	3s. 6d. per 1,000 cu.ft., *less* 25%
All in excess of 10,000,000 cu ft. per annum.	3s. 6d. per 1,000 cu.ft., *less* 50%

This allows the Department to hold the bulk of the existing load at the old rate, but to quote for all new business at the very attractive price of 1s. 9d. per 1,000 cu.ft. At this price, and with modern lamps and fittings, we are obtaining a considerable share of new business.

Discussion.

Mr. DORAN thanked Mr. Dow for his Address, and complimented him on the progress made at Kirkcaldy. Education was undoubtedly a pressing problem, and something must be done to give regularity of instruction to their students. He thought that 25 hours for instruction in Gas Manufacture or Supply was inadequate under the requirements of the Education Scheme.

Mr. REA also spoke of the trouble with education classes in Scotland, maintaining that suitable centres were necessary with a certainty of any class being provided each year. He suggested that a protest should be put forward from the Association against students having to re-sit examination in ancillary subjects in their final year.

Mr. BLACKHALL (Edinburgh) asked if provision were made for the cleaning of enamelled cookers, and what type of plant was used.

Mr. DOW replied that the number of " returns " had not been sufficient to warrant installation of special plant for reconditioning of cookers, but that the matter was being considered.

Mr. GAVIN (Melrose, Past-President) thought that difficulties would arise in trying to get a grant from the Education Fund. He stressed the point that the high price of gas in many places was due to capital charges, and that price of gas was not an indication of the efficiency of the management. Steps between first and second blocks in the tariff should be as steep as possible. It was an excellent idea to have a " demonstration street " to show what they could offer in the way of street lighting.

Mr. DOW maintained that reductions in tariff blocks were dependent on conditions prevailing in the district. He believed in getting the rate as low as possible and then tackling reduction of the separate blocks. Centralization of manufacture allowed the smaller works to attend to sales.

Mr. SAWERS (Perth) asked if the Matriculation standard had been dropped. Also what was Mr. Dow's opinion of " Holophane " refractors?

Mr. DOW said that henceforth students could enter for Diploma after passing the Institution's special examination in General Knowledge. The " Holophane " refractor was much superior to old lantern, as no shadow was thrown.

Detection of Toxic Gases

Home Office Tests

A series of tests has now been worked out on behalf of the Home Office and the Association of British Chemical Manufacturers for the detection of low concentrations of dangerous gases in industry.

The first of these tests, dealing with hydrogen sulphide, will shortly be published by the Department of Scientific and Industrial Research, through H.M. Stationery Office. The complete series of tests will comprise the following gases and vapours: Aniline, arsine, benzene, carbon bisulphide, carbon monoxide, chlorine, hydrogen cyanide, hydrogen sulphide, nitrous fumes, organic halogen compounds, phosgene, and sulphur dioxide.

In most cases chemical methods involving colour changes have been adopted and charts of standard stains have been prepared as part of the test. Each test has been carefully standardized in the laboratory and tested under practical conditions in actual works, and has been made as simple and straightforward as possible.

The cost of the pamphlets will be partly dependent upon the text, but it is estimated that they will cost between 5s. and 6s. per copy complete with one set of stains, and that spare charts of the standard stains, where required, will cost between 1s. and 3s. each. The cost of No. 1 of the series—viz., hydrogen sulphide—for instance, will be 3s. 6d. for the pamphlet, *plus* 2s. for the chart of stains, making 5s. 6d. in all. Copies of the test will be obtainable from H.M. Stationery Office, or through any bookseller.

Users of Simmance Patent GRAVITOMETERS can affirm that it compensates for variations in temperature and pressure;

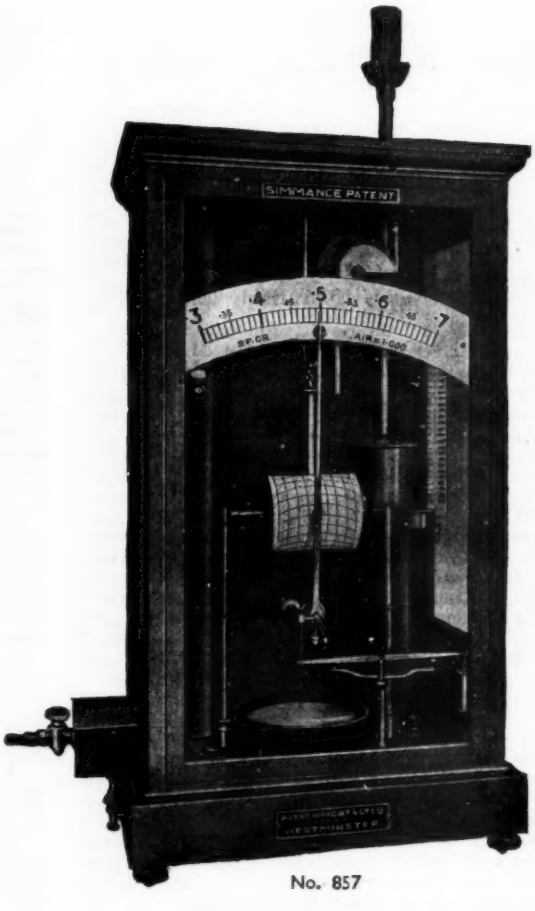
is accurate under all atmospheric conditions;

is absolutely reliable;

can be checked and set on site;

and that these specific gravity recorders continue to give satisfaction after years in constant use, and maintenance cost is very low.

No. 801



No. 857

WHAT IS THE SPECIFIC GRAVITY OF YOUR GAS?

Unless you test and record continuously you cannot realise the extent of probable variations. The permissible variations must be limited if the modern highly efficient gas appliances are to develop that efficiency for which they are designed. Constant heat-input depends on calorific value,

and specific gravity.

ALEXANDER WRIGHT & CO., LTD. — WESTMINSTER, S.W.1.

Gas Markets and Manufactures

Stock Market Report

(For Stock and Share Lists, see later pages)

The fortnightly Account which closed on Friday last will not soon be forgotten, for the period covered such notable events as the franc devaluation and the Three-Power exchange agreement. Moreover, despite the adverse political news from the Continent, business at one time reached almost "boom" proportions and prices soared. The heavy profit-taking movements which periodically took place, however, were sufficient to keep a check on values. Last week was characterized by the renewed firmness of gilt-edged securities and greater activity in rubber, oil, and copper shares, while remarkable scenes were witnessed on the introduction of Morris motor shares. The week closed with cheerful conditions prevailing in most sections.

Increased activity in the more speculative groups has in the past usually coincided with a falling off in the volume of business in the Gas Market, but the past few weeks have proved an exception to this rule, for the number of recorded transactions has been heavier than of late and prices have continued distinctly firm. In the London List last week a feature was the sharp rise of 12½ in Uxbridge ordinary to 165-175 brought about by the South-Eastern Gas Corporation's recent offer for the acquisition of this stock, to which reference was made in the Report a week ago. Improvements were also recorded by Watford and Montevideo ordinaries with gains of 2 points each, and a few preference and debenture issues also strengthened. Gas Light units were firm for the greater part of the week, but the price eased a little on Friday and finally closed 3d. lower at 27s. 6d.

At the Provincial Exchanges, the only movement was a rise of 3 points in Hartlepool consolidated to 125. In the Supplementary List a parcel of Eastbourne "A" changed hands at 179¼, and the nominal quotation was marked up 7 to 177½, while Ascot ordinary advanced 3 to 122½ on the news of the South-Eastern Gas Corporation's offer to purchase. This offer is as follows: For each £100 (nominal) Ascot 5% stock either (*a*) £128 15s. in cash or (*b*) 80 ordinary shares of £1 each together with 20 4½% redeemable cumulative preference shares of £1 each of the Corporation. The shares offered in exchange will rank for dividend from Oct. 1, 1936, and as the last dividend paid by the Ascot Company was for the half-year to June, 1936, the Directors have agreed to pay a further interim dividend for the three months to Sept. 30 at the rate of 5% per annum to all stockholders accepting either of the offers. At the rates paid for the past three years, the dividends on the stocks offered will amount to £5 14s. per annum against a *basic* rate of 5% on the Ascot stock.

In order to fulfil the terms of their recent offers, the Directors of the South-Eastern Gas Corporation are submitting a resolution at a meeting to be held on Oct. 22 to increase the authorized capital to £4,000,000 by the creation of 750,000 additional ordinary £1 shares and 750,000 irredeemable 4% preference £1 shares.

Current Sales of Gas Products

The London Market for Tar Products.

Oct. 19.

There is little of interest to report in the tar products market, prices being as follows:

Pitch, nominal at 35s. per ton f.o.b.

Creosote, about 5½d.

Refined tar, 3¾d.

Pure toluole, 2s. 3d. to 2s. 4d.; pure benzole, 1s. 7d. to 1s. 8d.; 95/160 solvent naphtha, about 1s. 7d.; and 90/160 pyridine, about 5s. 9d.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Oct. 19.

The average prices of gas-works products during the week were: Gas-works tar, 19s. 3d. to 24s. 3d. Pitch—East Coast, 33s. to 35s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 33s. to 35s. 6d.* Toluole, naked, North, 1s. 11d. to 2s. Coal tar crude naphtha, in bulk, North, 8d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 5½d. Heavy naphtha, North, 1s. 1½d. to 1s. 2½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¾d. to 5d.; low gravity, 4½d. to 4¾d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 2s. 5d. to 2s. 7d. Naphthalene, £19 to £21. Salts, 90s. to 95s., bags included. Anthracene "A" quality, 3d. to 3½d. per minimum 40% purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Oct.* 17.

The volume of business in this district is gradually dwindling but producers are comfortably placed and meantime prices show no appreciable alteration.

Crude gas-works tar.—The actual value is 34s. to 35s. per ton *ex* works in bulk.

Pitch remains quietly steady at 30s. to 32s. 6d. per ton f.o.b. Glasgow for export, and 30s. per ton *ex* works in bulk for home trade.

Refined tar is quoted freely at 3d. per gallon f.o.r. for export, and 3¾d. per gallon *ex* works in buyers' packages for home trade.

Creosote oil.—A moderate business is being conducted on the basis of the following prices: Specification oil, 4½d. to 4¾d. per gallon; low gravity, 4¾d. to 5d. per gallon; neutral oil, 4½d. to 4¾d. per gallon; all *ex* works in bulk.

Cresylic acid.—Business is restricted for want of prompt supplies and prices are more or less nominal as follows: Pale, 97/99%, 2s. 4d. to 2s. 6d. per gallon; dark, 97/99%, 2s. 1d. to 2s. 3d. per gallon; pale, 99/100%, 2s. 9d. to 3s. per gallon; all *ex* works in buyers' packages.

Crude naphtha.—Available supplies command round 5½d. to 6d. per gallon *ex* works in bulk, according to quality and district.

Solvent naphtha.—90/160 grade is lower at 1s. 4½d. to 1s. 5d. per gallon, but 90/190 heavy naphtha is unchanged at 11d. to 1s. per gallon.

Motor benzole is unaltered at 1s. 3d. to 1s. 3½d. per gallon.

Pyridines.—90/160 grade is 5s. 6d. to 6s. per gallon, and 90/140 grade is 6s. to 6s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole . . .	0	8½	to	0	9	per gallon at works
Motor ,, . . .	1	2	,,	1	2½	,, ,, ,,
90% ,, . . .	1	3	,,	1	3½	,, ,, ,,
Pure ,, . . .	1	7	,,	1	7½	,, ,, ,,

Contracts Advertised To-Day

Gasholder and Tank.

Bridlington Gas Company. [p. 232.]

Gas Oil.

Doncaster Gas Department. [p. 232.]

Mantles.

Blackpool Corporation. [p. 232.]

Trade Notes

British Oxygen Company's Motor Show Exhibit.

Having developed simultaneously with the automobile interests, the industry represented by the British Oxygen Company, Thames House, Millbank, S.W. 1, is in a peculiarly fitted position to satisfy individual requirements.

Among the B.O.C. equipment shown is oxy-coal gas lead-burning equipment for repairing worn battery plates, connections, and other lead work. This class of work, we understand, affords a profitable sideline in repairs, especially to those who do recharging or other radio business.

Lancashire Dynamo and Crypto, Ltd.

During last week the Sales Organization of the Lancashire Dynamo and Crypto, Ltd., attended a two days' sales conference at the Company's Trafford Park Works, Manchester. After the opening lunch on Wednesday, a conducted tour of the Works enabled the whole of the Sales Staff to note the improvements in the lay-out of the Works since the last Conference. Of particular interest to the visitors were the large number of special machine tools which have recently been installed to facilitate the rapid handling of the increasing number of important contracts received during the year. In the evening, a dinner was held at the Engineers' Club presided over by Mr. E. L. Chorlton, C.B.E., M.P. (Chairman), followed by a smoking concert. Upon the resumption of the Conference on Thursday, the various activities of the Company, including new products, &c., were described by Mr. H. W. Bosworth (Managing Director), Mr. C. R. Shaw (Director), and members of the Technical Staff.

"Turnall" Trafford Tiles.

"Turnall" asbestos-cement Trafford tiles are claimed to possess important features which are not present in other forms of asbestos-cement corrugated materials for roofing, although the latter undoubtedly occupy an excellent position in the corrugated sheet roofing family and efficiently fulfil their own purpose.

The Turner's Asbestos Cement Company, Trafford Park, Manchester, 17, state that "Turnall" Trafford tiles, however, are in a separate and distinct category. They are the original tiles to embrace scientific principles in the design and construction of asbestos-cement corrugated sheets. The design comprises four corrugations with intervening flats. When on the roof "Turnall" Trafford tiles give the effect of Roman tiling and embody those features of appearance and line, coupled with economy, so much desired by architects and builders.

We have received from the Turner's Asbestos Cement Company, which is a branch of Turner & Newall, Ltd., a copy of their handsome brochure which gives full details of the "Trafford" tile and many other of the firm's products.

● *Apply* **SCIENTIFIC CONTROL** *to*

the best advantage by adopting

THE WEST SYSTEMS

OF MODERN GAS AND COKE PRODUCTION

The West organization has co-operated with progressive Gas Undertakings in 24 countries in their schemes of works modernization, plant renewal, and extension.

- GLOVER-WEST VERTICAL RETORTS
- WESTVERTICAL CARBONIZING CHAMBERS
- BREEZE-FIRING PRODUCER EQUIPMENT
- WASTE-HEAT RECOVERY PLANTS
- THE WEST LIP-BUCKET CONVEYOR WITH AUTOMATIC LUBRICATION
- COKE GRADING AND PREPARATION UNITS

Contracts placed with West's Gas Improvement Company, Ltd., during the present year have included carbonizing plant installations for the Gas Undertakings of *Altrincham, *Bilston, *Carlisle, *Dudley, *Worcester, and *Yeadon, in England ; *Dumbarton, *Grangemouth, and Kelso, in Scotland; *Ballymena, in Ireland, and *Johannesburg, in South Africa.

* Repeat orders

WEST'S GAS IMPROVEMENT COMPANY, LTD.

MANCHESTER : ALBION IRONWORKS, MILES PLATTING — 'Phone: COLLYHURST 2961 : 'Grams: "STOKER, MANCHESTER"

LONDON : COLUMBIA HOUSE, ALDWYCH, W.C.2 — 'Phone: HOLBORN 4108 : 'Grams: "WESGASCO, ESTRAND, LONDON"

MEMBERS OF THE SOCIETY OF BRITISH GAS INDUSTRIES

STOCK AND SHARE LIST

Official Quotations on the London Stock Exchange

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Oct. 16.	Rise or Fall on Week.	Transactions, Lowest and Highest Prices During the Week.
1,767,439	Stk.	Sept. 7	7⅞	8	Alliance & Dublin Ord. ...	161—166	...	...
374,000	,,	June 22	4	4	Do. 4 p.c. Deb. ...	94—99	...	...
557,655	,,	Aug. 10	7	7	Barnet Ord. 7 p.c.	167—172	...	170
300,000	1	Oct. 5	1/9⅔	1/4⅔	Bombay, Ltd.	26/—28//-*	...	...
179,305	Stk.	Aug. 10	9½	9½	Bournemouth sliding scale ...	220—230	...	227—229
590,407	,,	,,	7	7	Do. 7 p.c. max. ...	168—173	...	171
493,960	,,	,,	6	6	Do. 6 p.c. Pref. ...	148—153	...	149½—152
50,000	,,	June 22	3	3	Do. 3 p.c. Deb. ...	84—89	...	...
262,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	105—110	...	...
335,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	125—130	...	128½—129¾
357,900	,,	Aug. 10	7½	7½	Brighton, &c., 6 p.c. Con. ...	168—173	...	...
649,955	,,	,,	6¾	6¾	Do. 5 p.c. Con. ...	153—158	...	...
205,500	,,	,,	6	6	Do. 6 p.c. 'B' Pref.	145—150	+3	147
855,000	,,	Oct. 5	8	7	British Ord.	155—160*	...	156½
100,000	,,	June 8	7	7	Do. 7 p.c. Pref.	151—156	...	...
350,000	,,	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	108—113	...	...
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...	97½
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	110—115	...	...
200,000	,,	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	97—99	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1—3	...	30/6
100,000	10	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref. ...	1—3	...	39/-
150,000	Stk.	June 22	4½	4½	Do. 4½ p.c. Deb. ...	80—85	...	...
626,860	,,	July 20	6	6	Cardiff Con. Ord.	128—133	...	...
237,860	,,	June 8	5	5	Do. 5 p.c. Red. Deb.	108—113	...	...
609,204	1	Oct. 5	-/11·48	-/11·48	Colonial Gas Assn. Ltd. Ord.	17/6—19/6*	...	...
296,053	1	,,	1/3·30	1/3·30	Do. 8 p.c. Pref.	21/—23/-*	...	...
1,775,005	Stk.	Aug. 10	5	5	Commercial Ord.	95—100	...	94½—96½
620,000	,,	June 8	3	3	Do. 3 p.c. Deb. ...	84—89	...	86
286,314	,,	Aug. 10	5	5	Do. 5 p.c. Deb. ...	122—127	...	123½—124
807,560	,,	Aug. 10	7	7	Croydon sliding scale ...	157—162	...	160½—161
644,590	,,	,,	5	5	Do. max. div.	115—120	...	117—120
620,385	,,	June 22	5	5	Do. 5 p.c. Deb.... ...	125—130	+2	126½—130
239,000	,,	Aug. 10	5	5	East Hull Ord. 5 p.c.... ...	108—111	+1	...
184,555	,,	Aug. 10	6	6	East Surrey Ord. 5 p.c. ...	128—133	...	...
176,211	,,	June 8	5	5	Do. 5 p.c. Deb. ...	123—128	...	...
250,000	1	June 22	4	6	Gas Consolidation Ord. ...	20/6—22/6	...	...
250,000	1	May 18	4	4	Do. 4 p.c. Red. Cum. Pref.	19/—21/-	...	20/—20/3
19,284,128	Stk.	Aug. 10	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	27/—28/-a	—/3	27/3—27/9
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	89—92	...	91
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	105—109	...	107⅞—109½
8,602,497	,,	May 18	3	3	Do. 3 p.c. Con. Deb. ...	87—90	—1	88—90
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	117—120	...	...
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	115—118	+1	116½
700,000	,,	Sept. 7	...	25/5§	Do. 3½ p.c. Red. Deb. ...	102—104	...	103
270,466	,,	Aug. 24	6	6	Harrogate New Cons. ...	128—133	...	...
213,200	,,	Aug. 10	6	6	Hornsey Con. 3½ p.c. ...	133—138	...	134
5,600,000	,,	May 18	8	12	Imperial Continental Cap. ...	155—165	...	157—161½
223,130	,,	July 20	3½	3½	Do. 3½ p.c. Red. Debs.	92—97	...	...
285,242	,,	Aug. 24	8½	8½	Lea Bridge 5 p.c. Ord. ...	172—177	...	...
11,751	,,	,,	10	8	Maidstone Gas 5 p.c. Cap. Stk.	190—200	...	...
63,480	,,	June 22	3	3	Do. 3p.c.Prp.Db.Sk.	80—85	...	...
75,000	,,	May 18	110	110	Malta & Mediterranean ...	190—200	...	...
392,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	100—105	...	...
231,978	Stk.	Aug. 24	5	5	M.S. Utility 'C' Cons. ...	110—115	...	...
818,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	102—107	...	106
360,075	,,	June 22	4	4	Do. 4 p.c. Deb. ...	104—109	...	...
148,955	,,	,,	5	5	Do. 5 p.c. Deb. ...	122—127	...	...
125,000	—	July 1	3½	3½	Do. 3½ p.c. Rd. Rg. Bds.	97—100	...	...
675,000	Stk.	June 22	†3	16	Montevideo, Ltd.	72—77	+2	73—73½
225,000	,,	Aug. 10	7½	7½	North Middlesex 6 p.c. Con.	170—175	...	...
396,160	,,	Aug. 10	5	5	Northampton 5 p.c. max. ...	110—115	...	...
300,000	,,	Apl. 20	†9	†7	Oriental, Ltd....	165—170	...	168—169½
416,617	,,	June 8	8	8	Plymouth & Stonehouse 5 p.c.	168—173	...	...
504,416	,,	Aug. 10	8½	8½	Portsmouth & Gosport Cons.	170—175	...	...
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	113—118	...	...
73,350	,,	,,	...	5	Do. 5 p.c. Pref. ...	118—123	...	...
114,000	,,	July 20	5	5	Preston 5 p.c. Pref.	110—115	...	...
363,470	1	Sept. 21	1/-	1/-	Severn Val. Gas Cor. Ld. Ord.	21/—23/-	...	22/-—22/9
454,510	1	,,	-/10⅔	-/10⅔	,, ,, 4½ p.c. Cum. Pref.	21/—23/-	...	...
133,201	Stk.	Aug. 24	5	8½	Shrewsbury 5 p.c. Ord. ...	145—150	...	...
90,000	10	June 8	†3½	†4	South African...	4—5	...	...
1,152,635	1	Sept. 7	1/2⅔	1/2⅔	South East'n Gas Cn. Ld. Ord.	27/—29/-	...	28/3—28/6
845,511	1	,,	-/10⅔	-/10⅔	Do. 4½ p.c. Red. Cum. Pref.	21/—23/-	...	...
200,000	1	,,	4	4	Do. 4 p.c. Cum. Pref. ...	20/6—21/6	...	...
450,000	Stk.	Aug. 10	4	4	Do. 4 p.c. Red. Deb. ...	100—103	...	...
150,000	,,	,,	...	3½	Do. 3½ p.c. Red. Deb. ...	...	...	...
6,709,895	,,	Aug. 10	6½	5	South Met. Ord.	118—123	...	119—122
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf....	145—150	...	147½
850,000	,,	,,	4	4	Do. 4 p.c. Irred. Pf....	104—107	...	104½—106¾
1,895,445	,,	June 22	3	3	Do. 3 p.c. Deb. ...	87—90	...	88¼—89½
1,000,000	,,	July 6	5	5	Do. 5 p.c. Red. Deb.	114—117	...	115½
1,543,795	,,	Aug. 10	6	6	South Suburban Ord. 5 p.c....	130—135	...	132½
512,825	,,	,,	5	5	Do. 5 p.c. Pref....	122—127	...	...
500,000	,,	,,	4	4	Do. 4 p.c. Pref....	102—107	...	...
888,587	,,	June 8	5	5	Do. 5 p.c. Deb....	123—128	...	...
250,000	,,	,,	4	4	Do. 4 p.c. Deb....	102—107	...	...
427,859	1	May 4	9⅔	1/2⅔	S. Western Gas & Water Ord.	21/6—23/6	...	22/9
160,523	1	Apl. 20	...	-/10⅔	Do. 4½% Red. Cum. Pref.	21/—23/-	...	...
110,000	Stk.	June 22	4	4	Do. 4½% Red. Deb. ...	100—105	...	104¾
647,740	,,	Aug. 10	5½	5	Southampton Ord. 5 p.c. ...	112—117	...	...
121,275	,,	June 8	4	4	Do. 4 p.c. Deb.	100—105	...	...
350,000	,,	Aug. 10	5½	5½	Swansea 5½ p.c. Red. Pref. ...	109—114	...	...
106,000	,,	June 8	6½	6½	Do. 6½ p.c. Red. Deb. ...	98—101	...	...
94,000	,,	,,	§35/-	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
1,076,490	,,	Aug. 10	6¾	6¾	Tottenham and District Ord.	152—157	...	155¾
409,835	,,	,,	5½	5½	Do. 5½ p.c. Pref....	128—133	...	130
62,235	,,	,,	5	5	Do. 5 p.c. Pref. ...	120—125	...	...
371,850	,,	June 8	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
369,774	,,	Aug. 10	7	7	Uxbridge, &c., 5 p.c. ...	165—175	+12½	...
108,330	,,	,,	5	5	Do. 5 p.c. Pref. ...	120—125	...	...
1,340,521	,,	Aug. 10	7	7	Wandsworth Consolidated ...	159—164	...	162
1,371,373	,,	,,	5	5	Do. 5 p.c. Pref. ...	122—127	...	125
500,000	,,	,,	...	...	Do. 4 p.c. Pref. ...	104½—107½	...	107½
1,317,964	,,	June 8	5	5	Do. 5 p.c. Deb. ...	127—132	...	130—131¾
338,300	,,	,,	4	4	Do. 4 p.c. Deb. ...	103—108	...	...
499,735	,,	Aug. 10	7½	7	Watford and St. Albans Ord.	155—160	+2	...
200,000	,,	,,	5	5	Do. 5 p.c. Pref. ...	120—125	...	...
200,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	131—136	...	...
200,000	,,	June 22	4	4	Do. 4 p.c. Red. Deb.	100—105	...	...
100,000	,,	,,	...	3½	Do. 3½ p.c. Red. Deb.	99—102	...	...
158.400	,,	Aug. 24	6b	5½	Winchester W. & G. 5 p.c. Con.	120—125	...	...

a.—The quotation is per £1 of Stock. b.—Paid £3, including 10s. on account of back dividends. * Ex div.
† Paid free of income-tax. ‡ For year. § Actual.

Stock and Share List continued overleaf.

Service

The value of your Sales and Service men is gauged by the knowledge they possess of matters pertaining to the Industry they serve. The more knowledge they possess the greater the assistance they can be towards building up an efficient and successful organization.

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All communications to Walter King, Limited, The "GAS SALESMAN" Offices, 11, Bolt Court, Fleet Street, London, E.C. 4.

STOCK AND SHARE LIST—Cont.

Stocks Officially Quoted on Provincial Exchanges

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Oct. 16.	Rise or Fall on Week.	Transactions, Lowest and Highest During the Week.
BRISTOL EXCHANGE.								
347,756	Stk.	July 20	6	5	Bath Cons.	122½—124½	...	...
1,667,250	,,	July 6	5	5	Bristol, 5 p.c. max.	120—122	...	...
120,420	,,	June 8	4	4	Do. 1st 4 p.c. Deb. ...	101½—103½	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	101½—103½	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	124—127	...	...
274,000	,,	Aug. 10	5	5	Newport (Mon.) 5 p.c. max....	110—114	...	...
13,200	12	Sept. 7	8⅔	7	Pontyp'l Gas & W. 10 p.c. 'A.'	13½—14½	...	...
13,600	10	,,	6	5	Do. 7 p.c. B.'	12—12½	...	...
40,000	10	,,	6	5	Do. 7 p.c. 'C.'	12—12½	...	...
140,778	Stk.	Aug. 10	5	5	Weston-super-Mare Cons. ...	112—114	...	...
64,338	,,	June 22	4	4	Do. 4 p.c. Deb.	100—102	...	...
33,340	,,	,,	7½	7½	Do. 7½ p.c. Deb.	163—166	...	...
LIVERPOOL EXCHANGE.								
157,150	Stk.	Aug. 10	6½	5	Chester 5 p.c. Ord.	107—112	...	...
92,500	,,	June 8	4	4	Do. 4 p.c. Pref.	98—102	...	...
32,540	,,	,,	3½	3½	Do. 3½ p.c. Deb. ...	90—95	...	...
41,890	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	99—103	...	...
2,167,410	,,	Aug. 24	6	6	Liverpool 5 p.c. Ord. ...	135—137	...	...
245,500	,,	June 22	5	5	Do. 5 p.c. Red. Pref ...	103—108	...	...
306,083	,,	July 6	4	4	Do. 4 p.c. Deb. ...	104—106	...	...
106,280	,,	July 20	10	10	Preston 'A' 10 p.c. ...	198—208	...	...
189,219	,,	,,	7	7	Do. 'B' 7 p.c.	137—147	...	...
NEWCASTLE EXCHANGE.								
122,877	Stk.	Aug. 10	8	8	Blyth 5 p.c. Ord.	153—155	...	...
732,000	,,	Aug. 10	5	5	Hartlepool G. & W. Co. & New	124—126	+3	125
2,061,318	,,	Aug. 10	5½	5	Newcastle & Gateshead Con.	27/9—28/3a	...	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	103—105	...	...
776,704	,,	June 22	3½	3½	Do. 3½ p.c. Deb. ...	99—101	...	...
277,285	,,	May 4	5	5	Do. 5 p.c. Deb. '43...	108—109	...	...
209,820	,,	Aug. 10	8½	8½	South Shields Con.	172—174	...	...
299,542	,,	Aug. 10	6	6	Sunderland 6 p.c. max. ...	130—132	...	...
NOTTINGHAM EXCHANGE.								
542,270	Stk.	Aug. 10	10	7	Derby Con.	185—190	...	...
55,000	,,	June 22	4	4	Do. 4 p.c. Deb.	100—105	...	...
84,750	,,	Feb. 17	5	12	Long Eaton 'A' Ord. ...	...	...	...
50,000	,,	,,	4	10	Do. 'B' Ord. ...	...	...	...
20,000	10	June 8	5	5	Do. 5 p.c. Pref. ...	10—12	...	...
80,000	Stk.	,,	5	5	Do. 5 p.c. Deb. ...	117—122	...	...
SHEFFIELD EXCHANGE.								
10,000	Stk.	Aug. 10	10	10	Great Grimsby 'A' Ord. ...	220—230	...	...
6,500	,,	,,	10	10	Do. B' Ord. ...	220—230	...	...
79,008	,,	,,	10	10	Do. 'C' Ord. ...	205—215	...	...
1,806,339	,,	Aug. 24	6	6	Sheffield Cons.	145—147	...	...
95,000	,,	July 6	4	4	Do. 4 p.c. Deb.	102—105	...	...

a The quotation is per £1 of Stock.

Supplementary List of Stocks and Shares not Officially Quoted

202,152	Stk.	Sept. 7	...	5	Ascot Ord.	120—125	+3	...
128,182	,,	July 6	...	5	Do. 5 p.c. Pref.	115—120	...	...
238,631	1	June 8	5	5	Assd. Gas and Water Ord....	21/—23 -	...	...
323,681	1	,,	4½	4½	Do. 4½ p.c. Cum. Pref. ...	21/6—23/6	...	...
150,000	Stk.	Sept. 21	...	3½	Do. 3½ p c. Red. Deb. ...	98—101	...	...
17,000	,,	Aug. 24	8	8	Bognor Orig. Ord. 'A' ...	175—185	...	...
62,210	,,	,,	8	8	Do. New Addl. 'A' ...	175—185	...	...
87,160	,,	,,	7	7	Do. New 7 p.c. max. ...	145—150	...	...
37,440	,,	Aug. 10	10	10	Cam.Univ. & Town 10 p.c.max.	205—215	...	...
125,970	,,	,,	7	7	Do. 7 p.c. max.	155—160	...	...
39,025	,,	,,	5	5	Do. 5 p.c. max.	108—113	...	...
65,000	,,	Aug. 10	8½	7½	Eastbourne 'A' 5 p.c. ...	175—180	+7	179½
198,000	,,	,,	7	6	Do. 'B' 3½ p.c.	142—147	+2	146
112,312	,,	,,	5	5	Do. 5 p.c. Pref.	118—123	...	122½
130,000	,,	June 22	5	5	Do. 5 p.c. Deb.	124—129	...	...
24,000	30	Aug. 10	8½	8½	Great Yarmouth 8½ p.c. max.	51—56	...	...
59,400	30	,,	7½	7½	Do. 7½ p.c. max.... ...	42—45	...	...
51,160	Stk.	June 8	5½	5½	Do. 5½ p.c. Deb.... ...	123—128	...	...
152,600	,,	Sept. 7	8	8	Guildford Cons.	182—192	...	190
54,055	,,	,,	5	5	Do. 5 p.c. Pref.	114—119	...	...
68,250	,,	June 8	5	5	Do. 5 p.c. Deb.	120—125	...	...
156,600	,,	Aug. 24	7½	7½	Hampton Court Cons. ...	173—178	...	...
107,960	10	Oct. 5	5½	4	Mid Kent Ord.	10—11*	...	...
230,940	Stk.	Aug. 10	10	10	Oxford & District Ord. ...	205—215	...	...
47,112	,,	,,	5	5	Do. 5 p.c. Pref.	118—123	...	...
50,000	,,	,,	6	6	Do. 6 p.c. Red. Pre ...	113—118	...	...
126,193	,,	May 18	7½	7½	Peterborough Ord.	160—170	...	...
64,990	,,	Sept. 7	6½	7½	Redditch Ord.	133—143	...	...
166,850	,,	Aug. 10	9	8	Romford Ord.	168—178	...	...
60,000	,,	,,	4	4	Do. 4 p.c. Pref.	97—100	...	...
44,000	,,	Sept. 21	5	5	Do. 5 p.c. Deb.	120—125	...	...
10,950	,,	Aug. 24	8	8	Ryde Ord.	165—170	...	...
136,191	,,	Aug. 10	7	5	Scarborough Ord.	126—136	...	...
27,825	,,	Aug. 24	8	8	Shanklin & Ventnor Cons. ...	180—190	...	...
40,643	,,	Sept. 21	7	7	Slough Ord.	156—161	...	...
221,000	,,	June 22	5	5	Do. 5 p.c. Deb.	116—121	...	...
28,872	1	May 4	5½	5½	S. Midland Gas Cpn.Ltd. Ord.	22/6—24/6	...	...
28,866	1	Sept. 7	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	22/—24/-	...	...
137,730	Stk.	Aug. 10	7	7	Southgate & Dist. 7 p.c. max.	151—156	...	154½
62,500	,,	,,	5	5	Do. 5 p.c. Pref.	120—125	...	...
117,228	,,	Aug. 10	6	5	Swindon Cons.	110—115	...	...
60,425	,,	June 22	5	5	Do. 5 p.c. Deb.	120—125	...	...
64,380	,,	June 8	5	5	Torquay and Paignton 5 p.c. Pf.	117—122	...	...
750,000	1	Oct. 5	5·52d.a	4	Utd. Kingdom Gas Cpn. Ord.	21/—22/-*	...	21/4½—21/10½
468,574	1	,,	2½	2½	Do. 4½ p.c. Prefd. Ord....	20/—22/-*	...	...
935,902	1	May 18	2½	4½	Do. 4½ p.c. Cum. Pref. ...	21/—23/-	...	22/9—23
600,000	Stk.	Sept. 21	3½	3½	Do. 3½ p.c. Red. Deb. ...	97—100	...	...
130,000	,,	Aug. 10	8	5	Wakefield Ord.	140—145	...	...
81,650	,,	,,	5	5	Do. 5 p.c. max.	105—110	...	...
82,000	,,	July 20	6	6	Weymouth Ord.	106—110	...	...
98,384	,,	Aug. 10	6	6	Wolverhampton 6 p.c. Pref.	127—132	...	...
160,000	,,	June 8	5½	5½	Do. 5½ p.c. Rd. Db	107—112	...	...
370,000	,,	July 20	6	4	York Cons.	111—116	...	...
90,000	,,	June 22	5	5	Do. 5 p.c. Red. Deb. ...	107—112	...	...
133,640	,,	July 20	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	130—135	...	...
120,000	,,	,,	5	5	Do. 5 p.c. Pref.	118—123	...	...
35,000	,,	June 22	5½	5½	Do. 5½ p.c. Deb.... ...	130—135	...	...

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